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XII

Revised

Saraswati

INTRODUCTORY MACROECONOMICS

DO NOT PRINT . IF U LIKE IT BUY ORIGINAL COPY

- MCQs
- Value-Based-Questions
- HOTS
- NCERT Textual Questions with Answers

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Strictly in accordance with the latest syllabus prescribed by CBSE, New Delhi and adopted by various boards, like—Haryana School Education Board, Bhiwani; Jharkhand Academic Council, Ranchi; and Bihar School Examination Board, Patna.

Saraswati

INTRODUCTORY MACROECONOMICS

[For Class XII]

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By

Dr. Deepashree
Associate Professor in Economics
Department of Commerce
Shri Ram College of Commerce
University of Delhi, Delhi

New Saraswati House (India) Pvt. Ltd.
New Delhi-110002 (INDIA)

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dr deepashree

NEW SARASWATI HOUSE

Second Floor, MGM Tower, 19 Ansari Road, Daryaganj, New Delhi-110002 (India)
Phone : +91-11-43556600
Fax : +91-11-43556688
E-mail : delhi@saraswatihouse.com
Website : www.saraswatihouse.com
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Revised edition 2016

ISBN: 978-93-5199-684-2

Published by: New Saraswati House (India) Pvt. Ltd.
19 Ansari Road, Daryaganj, New Delhi-110002 (India)

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Printed at: Vikas Publishing House Pvt. Ltd., Sahibabad (Uttar Pradesh)

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Preface

It gives me great pleasure in presenting the revised edition of **'Saraswati Introductory Macroeconomics'**, according to the **latest syllabus** prescribed by CBSE.

Some unique features of this book are:

- Clear and **precise exposition** of the subject.
- A brief **Chapter Scheme** outlining the contents of the Chapter.
- The **analysis** in each Chapter is developed in a step-by-step, systematic manner, based on logical reasoning.
- **Points to Remember** have been given at the end of every Chapter.
- Chapterwise questions under the heading—**Test Your Knowledge** have been given to enhance and cross-check the understanding of the subject. They are set on the pattern of the Board examination.
- Seven unsolved **Practice Papers.**
- A large number of **figures, examples and tables** give complete knowledge of various concepts.
- A large number of **solved numerical problems** have also been given.
- Many **new concepts** given in NCERT book have been given under the title **Annexure.**
- Completely covers the NCERT book and CBSE supplementary reading.
- **Value Based** and **Higher Order Thinking Questions** (HOT Questions) with answers have been given at the end of each unit.
- **Answers to NCERT textual questions** have been given at the end of each unit.
- **MCQs** have been included in every chapter.

The book is a product of thirty one years of my teaching experience and personal interaction with the commerce and economics students at Shri Ram College of Commerce, University of Delhi, Delhi. Through them, I have learnt the needs and requirements of the senior secondary school students. I am of the opinion that such students must be made to imbibe fundamental knowledge in a simple and scientific way.

Over the year, I have received many suggestions from teachers and students. I am thankful to them for their valuable inputs.

I am specially thankful to the Publisher, New Saraswati House (India) Pvt. Ltd., for giving me an opportunity to work for them.

Last but not the least, my heartfelt gratitude to Sushil, Sudeep and Saumya. Without their love and cooperation I would have never been able to complete this book.

Dr. Deepashree
deepashree.tgi@gmail.com

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Syllabus

Paper 1 **3 Hours** **100 Marks**

Units	Periods	Marks
Part A: Introductory Microeconomics		
1. Introduction	11	6
2. Consumer Equilibrium and Demand	34	16
3. Producer Behaviour and Supply	34	16
4. Forms of Market and Price Determination Under Perfect Competition with Simple Applications	31	12
	110	50
Part B: Introductory Macroeconomics		
5. National Income and Related Aggregates	32	15
6. Money and Banking	18	8
7. Determination of Income and Employment	27	12
8. Government Budget and the Economy	17	8
9. Balance of Payments	16	7
	110	50

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PART–A
INTRODUCTORY MICROECONOMICS (110 Periods)

Unit 1 : Introduction **(11 Periods)**

Meaning of microeconomics and macroeconomics

What is an economy? Central problems of an economy: what, how and for whom to produce; concepts of production possibility frontier and opportunity cost.

Unit 2 : Consumer's Equilibrium and Demand **(34 Periods)**

Consumer's equilibrium—meaning of utility, marginal utility, law of diminishing marginal utility, conditions of consumer's equilibrium using marginal utility analysis.

Indifference curve analysis of consumer's equilibrium—the consumer's budget (budget set and budget line), preferences of the consumer (indifference curve, indifference map) and conditions of consumer's equilibrium.

Demand, market demand, determinants of demand, demand schedule, demand curve and its slope, movement along and shifts in the demand curve; price elasticity of demand—factors affecting price elasticity of demand; measurement of price elasticity of demand—(*a*) percentage-change method and (*b*) geometric method (linear demand curve); relationship between price elasticity of demand and total expenditure.

Unit 3 : Producer Behaviour and Supply **(34 Periods)**

Production function—Short-run and Long-run

Total Product, Average Product and Marginal Product.

Returns to a Factor

Cost: Short run costs—total cost, total fixed cost, total variable cost; Average cost; Average fixed cost, average variable cost and marginal cost—meaning and their relationships.

Revenue—total, average and marginal revenue—meaning and their relationships.

Producer's equilibrium-meaning and its conditions in terms of marginal revenue, marginal cost.

Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply—(*a*) percentage-change method and (*b*) geometric method.

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Unit 4 : Forms of Market and Price Determination under Perfect Competition with Simple Applications. **(31 Periods)**

Perfect competition—Features; Determination of market equilibrium and effects of shifts in demand and supply.

Other Market Forms—monopoly, monopolistic competition, oligopoly—their meaning and features.

Simple Applications of Demand and Supply: Price ceiling, price floor.

PART–B
INTRODUCTORY MACROECONOMICS (110 Periods)

Unit 5 : National Income and Related Aggregates **(32 Periods)**

Some basic concepts: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation.

Circular flow of income; Methods of calculating National Income–Value Added or Product method, Expenditure method, Income method.

Aggregates related to National Income:

Gross National Product (GNP), Net National Product (NNP), Gross and Net Domestic Product (GDP and NDP)—at market price, at factor cost; National Disposable Income (gross and net), Private Income, Personal Income and Personal Disposable Income; Real and Nominal GDP.

GDP and Welfare

Unit 6 : Money and Banking **(18 Periods)**

Money—its meaning and functions.

Supply of money—Currency held by the public and net demand deposits held by commercial banks. Money creation by the commercial banking system.

Central bank and its functions (example of the Reserve Bank of India): Bank of Issue, Govt. Bank, Banker's Bank, Controller of Credit through Bank rate CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Unit 7 : Determination of Income and Employment **(27 Periods)**

Aggregate demand and its components.

Propensity to consume and propensity to save (average and marginal).

Short-run equilibrium output; investment multiplier and its mechanism.

Meaning of full employment and involuntary unemployment.

Problems of excess demand and deficient demand; measures to correct them—change in government spending, taxes and money supply.

Unit 8 : Government Budget and the Economy **(17 Periods)**

Government budget—meaning, objectives and components.

Classification of receipts—revenue receipts and capital receipts; classification of expenditure—revenue expenditure and capital expenditure.

Measures of government deficit—revenue deficit, fiscal deficit, primary deficit their meaning.

Unit9 : Balance of Payments **(16 Periods)**

Balance of payments account—meaning and components; balance of payments deficit—meaning.

Foreign exchange rate—meaning of fixed and flexible rates and managed floating.

Determination of exchange rate in a free market.

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Latest Question Paper Design

Marks 100 **Duration: 3 hrs.**

S. No.	Typology of Questions	Very Short Answer MCQ 1 Mark	Short Answer II 3 Marks	Short Answer I 4 Marks	Long Answer 6 Marks	Marks	%
1.	**Remembering** (Knowledge based Simple recall questions, to know specific facts, terms, concepts, principles, or theories; Identify, define, or recite, information)	2	1	2	2	25	25
2.	**Understanding** (Comprehension—to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information)	3	2		2	25	25
3.	**Application** (Use abstract information in concrete situation, to apply knowledge to new situations; Use given content to interpret a situation, provide an example, or solve a problem)	3	1	2	1	20	20
4.	**High Order Thinking Skills** (Analysis & Synthesis—Classify, compare, contrast, or differentiate between different pieces of information; Organize and/or integrate unique pieces of information from a variety of sources)	1	1	1	2	20	20
5.	**Evaluation** (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	1	1	-	1	10	10
	Total	10 × 1 = 10	6 × 3 = 18	6 × 4 = 24	8 × 6 = 48	100 (30)	100

Note: There will be **Internal Choice** in questions of 3 marks, 4 marks and 6 marks in both sections (A and B). (Total 3 internal choices in section A and total 3 internal choices in section B).

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Contents

Introductory Macroeconomics

UNIT 5 : National Income and Related Aggregates

1. Basic Concepts of National Income 1.1–1.16
2. Methods of Estimating National Income 2.1–2.106
3. Related Aggregates of National Income and Disposable Income 3.1–3.31

- Value Based and Higher Order Thinking (HOT) Questions (with Answers) 3.32–3.35
- NCERT Textual Questions with Answers 3.36–3.40

UNIT 6 : Money and Banking

4. Money 4.1–4.10
5. Banking 5.1–5.12

- Value Based and Higher Order Thinking (HOT) Questions (with Answers) 5.13–5.16
- NCERT Textual Questions with Answers 5.17–5.20

UNIT 7 : Determination of Income and Employment

6. Income Determination and the Multiplier 6.1–6.58
7. Problems of Excess and Deficient Demand and Policy Measures to Correct Them 7.1–7.13

- Value Based and Higher Order Thinking (HOT) Questions (with Answers) 7.14–7.17
- NCERT Textual Questions with Answers 7.18–7.20

UNIT 8 : Government Budget and the Economy

8. Government Budget and the Economy 8.1–8.20

- Value Based and Higher Order Thinking (HOT) Questions (with Answers) 8.21–8.22
- NCERT Textual Questions with Answers 8.23–8.24

UNIT 9 : Balance of Payments

9. Foreign Exchange Rate 9.1–9.16
10. Balance of Payments 10.1–10.14

- Value Based and Higher Order Thinking (HOT) Questions (with Answers) 10.15–10.18
- NCERT Textual Questions with Answers 10.19–10.20
- **PRACTICE PAPERS** PP.1–PP.14

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Memory of
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National Income and Related Aggregates

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This Unit Contains

1. Basic Concepts of National Income
2. Methods of Estimating National Income
3. Concepts of Related Aggregates and Disposable Income

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Basic Concepts of National Income

1

Chapter Scheme

1.1 Introduction: Macroeconomics
1.2 Goods: Meaning and Types
  1.2.1 Intermediate Goods *vs.* Final Goods
  1.2.2 Consumption Goods *vs.* Capital Goods
1.3 Investment: Meaning and Types
  1.3.1 Gross investment *vs.* Net Investment
  1.3.2 Depreciation
1.4 Stock *vs.* Flow
1.5 Economic Territory
1.6 Normal Residents of a Country
1.7 National Income Aggregates
  1.7.1 Gross Domestic Product at Market Price (GDP_{MP})
  1.7.2 Gross National Product at Market Price (GNP_{MP})
  1.7.3 Net National Product at Market Price (NNP_{MP})
  1.7.4 Net Domestic Product at Market Price (NDP_{MP})
  1.7.5 Net Domestic Product at Factor Cost (NDP_{FC})
  1.7.6 Gross Domestic Product at Factor Cost (GDP_{FC})
  1.7.7 Gross National Product at Factor Cost (GNP_{FC})
  1.7.8 Net National Product at Factor Cost (NNP_{FC}) or National Income (NI)
1.8 Net Factor Income From Abroad (NFIA)
  1.8.1 Meaning of Net Factor Income from Abroad
  1.8.2 Constituents of *NFIA*
  1.8.3 Difference Between *NFIA* and Net Exports
1.9 Important Formulae at a Glance
■ Points to Remember
■ Test Your Knowledge
■ Answers to MCQs

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1.1 INTRODUCTION: MACROECONOMICS

Meaning and Subject-matter of Macroeconomics

The word 'Macro' is derived from the Greek word *makros* meaning large. Macroeconomics deals with aggregative economics. **Macroeconomics is defined as the study of overall economic phenomena, such as problem of full employment, *GNP*, savings, investment, aggregate consumption, aggregate investment, economic growth, etc.** It is also known as **Theory of Income and Employment** since its major subject-matter deals with the determination of income and employment.

The study of macroeconomics is used to solve many problems of an economy like, monetary problems, economic fluctuations, general unemployment, inflation, disequilibrium in the balance of payment position, *etc.* The scope or subject-matter of macroeconomics includes the topics as shown in Fig. 1.1.

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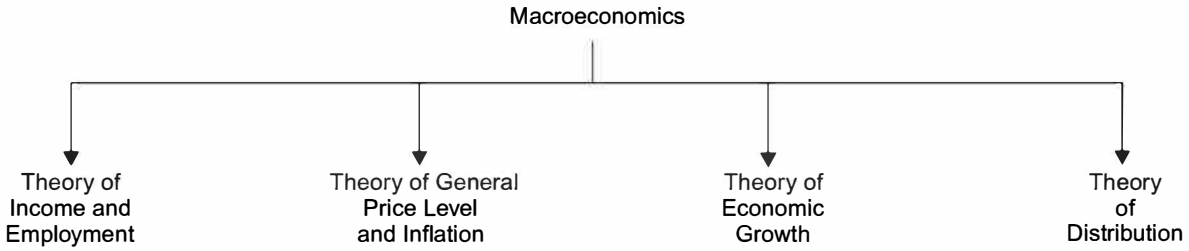


Fig. 1.1 Subject-matter of Macroeconomics

Importance of Macroeconomics

Macroeconomics has emerged as the most challenging branch of economics. In the words of **Samuelson,** "... no area of economics is today more vital and controversial than macroeconomics."

The importance of macroeconomics on theoretical and practical reasons is clear from the following points:

1. It gives an overall view of the growing complexities of an economic system. It provides powerful tools to explain the working of the complex economic systems.
2. It provides the basic and logical framework for formulating appropriate macroeconomic policies (*e.g.*, for inflation, poverty, unemployment, etc.) to direct and regulate economy towards desirable goals.
3. It helps in analysing the reasons for economic fluctuations and provide remedies.

Limitations of Macroeconomics

Some of the major limitations of macroeconomics are:

(*i*) Macroeconomics ignores structural changes in an individual unit of the aggregate. The conclusions drawn on the basis of aggregate variables may be misleading.

(*ii*) As **Hicks** puts it, "most of *macro* magnitudes which figure so largely in economic discussions are subject to errors and ambiguities."

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1.2 GOODS: MEANING AND TYPES

Goods are any physical object, natural or man-made, which can be seen, touched and measured, and command a price in the market. Goods include both physical objects (*i.e.*, tangible objects) and services (*i.e.*, intangible).

A good which commands a price in the market is called **economic good** and which does not command a price is called **non-economic good**.

1.2.1 Intermediate Goods *vs.* Final Goods

A product can be intermediate or final. The distinction, based on end-user or ultimate user, is of great importance in national income accounting.

Intermediate Goods

They are those goods which are acquired for further production or for resale during the same year.

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Examples. Wheat purchased by a restaurant, cotton purchased by thread making mill, furniture purchased by a furniture shop for resale, cloth purchased by manufacturer of ready-made garments, etc.

Features of intermediate goods are:

(*a*) The value of intermediate goods is not added in national income (to avoid the problem of double counting).

(*b*) These goods are not consumed by consumers.

(*c*) They remain within the production boundary. Production boundary is an imaginary line drawn around the production sector of an economy. Within the line firms purchase each other's goods for further production.

Final Goods

They are those goods which are acquired for personal consumption and investment. These goods reach their 'final user'.

Examples. (*a*) Wheat, furniture, cloth, bread, butter, etc., used by the consumers, (*b*) Machines used by producers, (*c*) Government Services are also treated as final good in National Income Accounting.

Features of final goods are:

(*a*) The value of final goods is included in the calculation of national income.

(*b*) Final goods are consumed by consumers (called consumption goods) or used as investment by producers (called capital goods).

(*c*) They remain outside the production boundary.

Difference between Intermediate and Final Goods

Table 1.1 summarises the difference between intermediate and final goods.

Table 1.1 **Difference between Intermediate and Final Goods**

Intermediate Goods	Final Goods
1. They are used for production of other goods and services.	1. They are used for final consumption.
2. They are meant for resale, so value gets added to these goods.	2. They are not meant for resale, so no value is added to these goods.
3. They remain within the production boundary.	3. They remain outside the production boundary.
4. Their value is not included in national income.	4. Their value is included in national income.
5. *Example*: Milk used in a sweet shop for resale.	5. *Example*: Milk bought by household for consumption.

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1.2.2 Consumption Goods *vs.* Capital Goods

(*i*) Consumption Goods. They are those goods which are bought by consumers as final or ultimate goods to satisfy their wants directly. These include (*i*) **durable goods** like car, television, radio, etc., (*ii*) **non-durable goods** and services like fruit, oil, milk, vegetable, services of doctor, teacher, etc., (*iii*) **semi-durable goods** such as crockery, etc., and (*iv*) **services** like bank officer, doctor, teacher, etc.

(*ii*) Capital Goods. They are those final goods which form the capital stock of a country at the end of an accounting year and which are used up in the production process. These include (*i*) durable goods like car purchased by a firm for use in business (*ii*) stock of raw material, semi-finished and finished goods at the end of an accounting year. Such goods satisfy human wants indirectly.

1.3 INVESTMENT: MEANING AND TYPES

Investment means addition made to the stock of physical capital such as buildings, plants, machines, tools and equipments, etc. during a given period of time. It is also called **capital formation**. It raises the productive capacity of the economy.

1.3.1 Gross Investment *vs.* Net Investment

Gross Investment. It refers to total addition made to stock of physical capital over a period of time. It includes depreciation.

Net Investment. It is defined as net addition made to stock of physical capital over a period of time. It does not include depreciation.

1.3.2 Depreciation

It means loss of value or fall in the value of fixed assets due to normal wear and tear in the process of production and expected obsolescence. It is also called **consumption of fixed capital**.

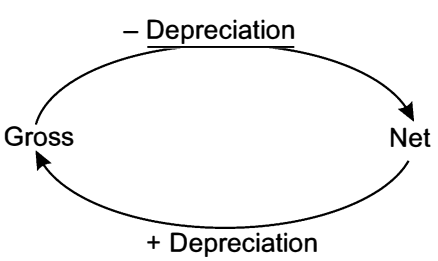
Significance of Depreciation. Depreciation helps to differentiate between gross and net. For example:

Gross Investment − Depreciation = Net Investment

or Gross Investment − Net Investment = Depreciation

or Net Investment + Depreciation = Gross Investment.

Thus, we come to the conclusion that:



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1.4 STOCK *vs.* FLOW

Table 1.2 gives the difference between stock and flow.

Table 1.2 **Difference between Stock and Flow Variables**

Stock	Flow
1. Stock means that quantity of an economic variable which is measured at a particular point of time.	1. Flow is that quantity of an economic variable which is measured during a period of time.
2. Stock has no time dimension.	2. Flow has time dimension—like per hour, per day, per month and per year.
3. Stock is a static concept.	3. Flow is a dynamic concept.
4. Examples: (*a*) Wealth (*b*) Water in a tank (*c*) Inventories (*d*) Capital	4. Examples: (*a*) Income (*b*) Water in a stream (*c*) Changes in inventories (*d*) Capital formation

There is mutual dependence between stock and flow. For example, flow of withdrawals from a bank depends upon the stock of saving.

1.5 ECONOMIC TERRITORY

The first thing to note is that economic territory of a country is not simply political frontiers of that country. The two may have common elements, but still they are conceptually different. Let us first see how it is defined. According to the **United Nations, "Economic territory is the geographical territory administered by a government within which persons, goods and capital circulate freely."**

The above definition is based on the criterion "freedom of circulation of persons, goods and capital". Clearly, those parts of the political frontiers of a country where the government of that country does not enjoy the above 'freedom' are not to be included in economic territory of that country. One example is embassies. Government of India does not enjoy the above freedom in the foreign embassies located within India. So, these are not treated as a part of economic territory of India. They are treated as part of the economic territories of their respective countries. *For example,* the US embassy in India is a part of economic territory of the USA Similarly, the Indian embassy in Washington is a part of economic territory of India.

Scope

Based on 'freedom' criterion, the scope of economic territory is defined to cover:

(*i*) Political frontiers including territorial waters and air space.

(*ii*) Embassies, consulates, military bases, etc. of the country located abroad, but excluding those of other countries located within the political frontiers.

(*iii*) Ships, aircrafts, etc. operated by the residents between two or more countries.

(*iv*) Fishing vessels, oil and natural gas rigs, etc. operated by the residents in the international waters or other areas over which the country enjoys the exclusive rights or jurisdiction.

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Implication

National income and related aggregates are basically measures of production activity. There are two categories of national income aggregates—domestic and national, or domestic product and national product. *Production activity of all production units located within the economic territory is domestic product.* Gross domestic product, net domestic product are some examples. We will learn more about the implications after studying the concept of resident. It is concerned with 'where'.

1.6 NORMAL RESIDENTS OF A COUNTRY

Note that citizen and resident are two different terms. This does not mean that a citizen is not resident, and a resident is not a citizen. A person can be a citizen as well as resident but it is not necessary that a citizen of a country is necessarily the resident of that country. A person can be a citizen of one country and at the same time a resident of another country. *For example,* an NRI—Non-resident Indian. An NRI is citizen of India but a resident of the country in which he lives.

Citizenship is basically a legal concept based on the place of birth of the person or some legal provisions allowing a person to become a citizen. On the other hand, residentship is basically an economic concept based on the basic economic activities performed by a person.

A resident is defined as follows:

A resident, whether a person or an institution, is one whose centre of economic interest lies in the economic territory of the country in which he lives.

The 'centre of economic interest' implies two things: (*i*) the resident lives or is located within the economic territory and (*ii*) the resident carries out the basic economic activities of earnings, spending and accumulation of wealth from that location. It is concerned with 'by whom'.

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Implication

Production activity of the residents of an economic territory is national product. *GNP, NNP,* are some examples. National product includes production activities of residents irrespective of whether they are performed within the economic territory or outside it.

In comparison, domestic product includes production activity of the production units located in the economic territory irrespective of whether they are carried out by the residents or non-residents.

1.7 NATIONAL INCOME AGGREGATES

National Income. ***NI* or *National Product is defined as the money value of all final goods and services produced within the domestic territory of a country in an accounting year plus net factor income from abroad.*** National income/product is the value of production by the normal residents of a country (within or outside the domestic territory).

Domestic Income. ***DI*** is the value of production within the domestic territory of a country.

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There are many different concepts of national income. Each has a specific meaning, method of measurement and use. A list of these eight concepts of national income is:

1. Gross Domestic Product at Market Price (GDP_{MP})
2. Gross National Product at Market Price (GNP_{MP})
3. Net National Product at Market Price (NNP_{MP})
4. Net Domestic Product at Market Price (NDP_{MP})
5. Net Domestic Product at Factor Cost (NDP_{FC})
6. Gross Domestic Product at Factor Cost (GDP_{FC})
7. Gross National Product at Factor Cost (GNP_{FC})
8. Net National Product at Factor Cost (NNP_{FC})

Notes.

1. Basis of distinction between **Gross** and **Net** is **Depreciation** or consumption of fixed capital

   Gross = Net + Depreciation

   or Net = Gross − Depreciation

   Exception: Gross output and net output.

   Where Gross output = Net output + Intermediate consumption

2. Basis of distinction between **National** and **Domestic** is **Net factor income from abroad**.

   National = Domestic + Net factor income from abroad.

3. Basis of distinction between **Market Price** and **Factor Cost** is **Net indirect taxes** (*i.e.*, Indirect taxes − Subsidies)

   Market Price = Factor cost + Net indirect taxes

   = Factor cost + (Indirect taxes − Subsidies)

   or Factor Cost = Market price − Net indirect taxes

   = Market price − (Indirect taxes − Subsidies)

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1.7.1 Gross Domestic Product at Market Price (GDP_{MP})

The subscript 'gross' means that GDP_{MP} is gross of consumption of fixed capital. 'Domestic' means domestic teritory or resident production units. 'Product' means final products. 'Market price' means that *GDP* is calculated at price inclusive of indirect taxes and exclusive of subsidies. **GDP_{MP} is a macro concept which is defined as the market value of the final goods and services produced within the domestic territory of a country during one year by all production units inclusive of net indirect taxes and depreciation.**

The important points to remember about GDP_{MP} are:

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1. GDP_{MP} is a **flow concept,** *i.e.,* flow of goods and services produced during a year. It does not include goods produced in the previous year.
2. GDP_{MP} is always GDP_{MP} at current prices. In situations where price of base year is taken, it is called GDP_{MP} at constant prices.
3. GDP_{MP} is not value of output because it excludes value of intermediate consumption, *i.e.,* GDP_{MP} is sum total of **value added** by all producing units in domestic territory of a country. (It includes value added by multinational companies in India.)
4. GDP_{MP} **excludes transfer payments,** capital gains, financial transactions and income generated through illegal means.
5. GDP_{MP} is the **market value** of final goods and services where market value = price × quantity of final goods and services.
6. To avoid double counting, GDP_{MP} includes only **final value** of goods and services.
7. GDP_{MP} is confined to **domestic territory** of a country and therefore, excludes *NFIA*.

GDP_{MP} is measured by the formula:

GDP_{MP} = Value of output in domestic territory − Value of intermediate consumption

or $GDP_{MP} = \Sigma$ Value added

Ques. 1. Why is GDP_{MP} called gross?

Solution. GDP_{MP} is final products valued at market price. This is what buyers pay. But this is not what production units actually receive. Out of what buyers pay, the production units have to make provision for depreciation and payment of indirect tax like excise, sales tax, etc. This explains) why GDP_{MP} is called 'gross'. It is called gross **because no provision has been made for depreciation.** However, if depreciation is deducted from *GDP*, it becomes Net Domestic Product (*NDP*).

Ques. 2. Why is GDP_{MP} called 'at market price'?

Solution. Out of what buyers pay, the production units have to make payments of indirect taxes, if any. Sometimes production units receive subsidy on production. This is in addition to the market price which production units receive from the buyers. Therefore, what production units actually receive is not the 'market price' but "market price − indirect tax + subsidies". This is what is actually available to production units for distribution of income among the owners of factors of production.

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1.7.2 Gross National Product at Market Price (GNP_{MP})

GNP_{MP} is defined as the market value of the final goods and services produced in the domestic territory of a country by normal residents during an accounting year including net factor income from abroad.

GNP_{MP} is measured by the formula:

GNP_{MP} = GDP_{MP} + Net factor income from abroad

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1.7.3 Net National Product at Market Price (NNP_{MP})

NNP_{MP} is defined as the market value of the output of final goods and services produced by normal residents of an economy in its domestic territory during an accounting year exclusive of depreciation and inclusive of net factor income from abroad.

NNP_{MP} can be calculated by the following formulae:

$NNP_{MP} = GNP_{MP}$ – Depreciation ...(1)

$NNP_{MP} = NDP_{MP} + NFIA$ ...(2)

$NNP_{MP} = GDP_{MP} + NFIA$ – Depreciation ...(3)

1.7.4 Net Domestic Product at Market Price (NDP_{MP})

NDP_{MP} is defined as the market value of final goods and services produced in the domestic territory of a country by its normal residents and non-residents or by all during an accounting year less of depreciation.

NDP_{MP} can be calculated by the following formulae:

$NDP_{MP} = GDP_{MP}$ – Depreciation ...(1)

$NDP_{MP} = NNP_{MP}$ – Net factor income from abroad ...(2)

or $NDP_{MP} = \Sigma NVA$ ... (ΣNVA = summation of Net Value added of all firms)

1.7.5 Net Domestic Product at Factor Cost (NDP_{FC})

NDP_{FC} is alternatively known as Net Domestic Income. NDP_{FC} is defined as the total factor incomes earned by the factors of production. In other words, NDP_{FC} is the sum of domestic factor incomes.

NDP_{FC} can be calculated by the following formulae:

NDP_{FC} = Compensation of employees + Operating surplus + Mixed income of the self – employed ...(1)

or $NDP_{FC} = NDP_{MP}$ – Indirect taxes + Subsidies ...(2)

or $NDP_{FC} = NDP_{MP}$ – Net indirect taxes ...(3)

1.7.6 Gross Domestic Product at Factor Cost (GDP_{FC})

***GDP* at factor cost is defined as the sum of net value added by all the producers in the domestic territory of a country inclusive of depreciation during an accounting year.**

GDP_{FC} is measured by the following formulae:

$GDP_{FC} = GDP_{MP}$ – Indirect taxes + Subsidies ...(1)

$GDP_{FC} = NDP_{FC}$ + Depreciation ...(2)

= Compensation of employees + Operating surplus + Mixed income + Depreciation

= Domestic factor income + Depreciation

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1.7.7 Gross National Product at Factor Cost (GNP_{FC})

GNP_{FC} is defined as the sum of gross value at factor cost by normal residents of a country during a year and net factor income from abroad.

GNP_{FC} is calculated by the following formulae:

$$GNP_{FC} = NNP_{FC} + \text{Depreciation} \quad ...(1)$$

$$GNP_{FC} = GNP_{MP} - \text{Net indirect taxes} \quad ...(2)$$

1.7.8 Net National Product at Factor Cost (NNP_{FC}) or National Income (NI)

National Income is defined as the factor income accruing to the normal residents of the country (rent, interest, profit and wages) during a year. It is the sum of domestic factor income and net factor income from abroad. **NNP_{FC}** is defined as the sum of net value added at factor cost by normal residents in the domestic territory of a country and net factor income from abroad in an accounting year.

NNP_{FC} or NI is calculated by the following formulae:

$$NNP_{FC} = NDP_{FC} + \text{Net factor income from abroad} \quad ...(1)$$

$$NI = \text{Domestic factor income} + NFIA \quad ...(2)$$

$$= \text{Compensation of employees} + \text{Operating surplus} + \text{Mixed income} + NFIA$$

$$= NNP_{MP} - \text{Net indirect taxes}$$

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1.8 NET FACTOR INCOME FROM ABROAD (*NFIA*)

The concept of Net Factor Income from Abroad (*NFIA*) is of great significance. It distinguishes between domestic factor income and national income.

National Income = Domestic factor income + Net factor income from abroad

1.8.1 Meaning of Net Factor Income from Abroad

Net factor income from abroad is the difference between the income received from abroad by the normal residents of a country for rendering factor services and the income paid for the factor services rendered by non-residents within the domestic territory of a country. In other words, the normal residents of India earn income from abroad in the form of wages, rent, interest, profit, etc. On the same line, foreigners who are normal residents of other countries also earn income from India. The difference between the two is called net factor income from abroad.

$NFIA$ = Factor income from abroad by the normal resident − Factor income of non-resident in the domestic territory

1.8.2 Constituents of *NFIA*

The three main components of *NFIA* are:

(*a*) Net compensation of employees.

(*b*) Net income from property and entrepreneurship (interest, rent, profit and dividend) and

(*c*) Net retained earnings of resident companies abroad.

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(*a*) Net Compensation of Employees. Net compensation of employees is the difference between compensation of employees received by resident workers that are living temporarily abroad or are employed abroad and similar payments made to non-resident workers that are temporarily staying or employed within the domestic territory of a country.

Net Compensation of Employees from Abroad = Compensation received by residents of a country working abroad − Compensation paid to the non-residents working in the domestic territory.

Examples of factor income earned from abroad by Indian residents are:

(*i*) Profits earned by State Bank of India located in England come under the category of net factor income earned from abroad by Indian residents.

(*ii*) Compensation of employees paid to Indian employees working in the Embassy like American and Japanese embassies located in India come under the category of factor income earned from abroad by Indian residents.

(*iii*) Rent received by State Bank of India on the building rented to a foreign embassy in New Delhi.

(*iv*) Interest income received by Indians on the bonds they purchased from foreign countries.

(*v*) Compensation of employees paid to Indian employees working in the office of the World Bank located in India.

Note. Salary paid to Indian Ambassador in USA by Government of India is not included under the category of net factor income from abroad by Indian residents. It is a part of domestic income.

(*b*) Net Income from Property and Entrepreneurship. Net income from property and entrepreneurship is equal to the difference between the income received by way of interest, rent and profit by the residents of a country and similar payments made to the rest of the world.

Net Income from Property and Entrepreneurship from Abroad = Income received by the residents in the form of rent, interest and profit from the rest of world − Payments made in the form of rent, interest and profit to the rest of the world.

(*c*) Net Retained Earnings of Resident Companies. Net retained earnings of resident companies is the difference between the retained earnings (or undistributed profits) of the resident companies located abroad and retained earnings of non-resident (or foreign companies) located within the domestic territory of a country.

Net Retained Earnings of Resident Companies Abroad = Retained Earnings of Resident Companies Abroad − Retained Earnings of Foreign Companies Located in a Country.

Example: British companies operating in the domestic territory of India are foreign companies for India and Indian companies operating in Britain are resident companies of India. Thus,

Net Factor Income from Abroad = Net compensation of employees from abroad + Net income from property and entrepreneurship from abroad + Net retained earnings of resident companies abroad.

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1.8.3 Difference Between *NFIA* and Net Exports

Table 1.3 **Difference between *NFIA* and Net Exports**

Net Factor Income from Abroad	Net Exports
1. It refers to the difference between factor income earned by our normal residents from rest of the world and factor income earned by non-residents.	1. It refers to the difference between exports and imports of goods and non-factor services related to domestic territory of the country.
2. Net Factor Income from abroad = Factor Income from abroad earned by the Normal Residents – Factor Income of non-residents of the domestic territory.	2. Net Exports = Exports – Imports
3. It is a part of national income.	3. It is a part of domestic income.
4. Its main components are: (*i*) Net compensation of employees. (*ii*) Net income from property and entrepreneurship. (*iii*) Net retained earnings of residents companies.	4. Its main components are: (*i*) Export and import of goods. (*ii*) Export–import of non-factor services.

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1.9 IMPORTANT FORMULAE—AT A GLANCE

Table 1.4 **Formulae of Different Concepts of *NI***

1. GDP_{MP}	= Value of output in domestic territory – Value of Intermediate consumption	... (1)
	= Value added	... (2)
2. GNP_{MP}	= GDP_{MP} + Net factor income from abroad	
3. NNP_{MP}	= GNP_{MP} – Depreciation	... (1)
	= NDP_{MP} + *NFIA*	... (2)
	= GDP_{MP} + *NFIA* – Depreciation	... (3)
4. NDP_{MP}	= NNP_{MP} – *NFIA*	... (1)
	= GDP_{MP} – Depreciation	... (2)
5. NDP_{FC}	= NDP_{MP} – Indirect taxes + Subsidies	... (1)
	= NDP_{MP} – Net indirect taxes	... (2)
	= *COE* + Operating Surplus + Mixed income	... (3)
6. GDP_{FC}	= Domestic factor income + Consumption of fixed capital	... (1)
	= NDP_{FC} + Depreciation	... (2)
	= GDP_{MP} – Indirect taxes + Subsidies	... (3)

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7. GNP_{FC}	= NNP_{FC} + Depreciation	... (1)
	= GDP_{MP} – Net indirect taxes	... (2)
8. NNP_{FC} or National Income	= NNP_{MP} – Net indirect taxes	... (1)
	= NDP_{FC} + *NFIA*	... (2)
	= Domestic factor income + *NFIA*	... (3)

Points to Remember

Final Goods *vs.* Intermediate Goods

Final goods are used for final consumption and not meant for resale. Intermediate goods are used for production of other goods and services. Their value is not included in *M*.

Consumption Goods and Capital Goods

Consumption goods are used by consumers as final goods to satisfy their wants. Capital goods are used as stock of final goods for production.

Different Concepts of National Income

1. **National Income or National Product**
   National Income is defined as the money value of all final goods and services produced within the domestic territory of a country in an accounting year plus net factor income from abroad.
2. **Domestic Income or Domestic Product**
   Domestic Income is the value of production within the domestic territory of a country.
3. **Gross** = Net + Depreciation
   National = Domestic + *NFIA*
   Market Price = Factor cost + Net indirect taxes
4. **Gross Domestic Product at Market Price**
   Gross Domestic Product at Market Price is defined as the market value of the output of final goods and services produced by all the producers, in the domestic territory of a country during an accounting year.
5. **Gross National Product at Market Price**
   The Gross National Product at Market Price is defined as the market value of the final goods and services produced in an economy by normal residents during an accounting year including net factor income from abroad.
6. **Net National Product at Market Price**
   Net National Product at Market Price is the market value of the output of final goods and services produced in an economy by normal residents during an accounting year and including net factor income from abroad but exclusive of depreciation.
7. **Net Domestic Product at Market Price**
   Net Domestic Product at Market Price is the market value of final goods and services produced (exclusive of depreciation) in the domestic territory of a country by its normal residents and non-residents during an accounting year.

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8. Net Domestic Product at Factor Cost or Net Domestic Income

Net Domestic Product at Factor Cost is the sum of net values added by all the producers in the domestic territory of a country during an accounting year or net domestic income is the sum total of factor income in form of wages, rent, interest and profit generated by all the producers in the domestic territory of a country.

9. Gross Domestic Product at Factor Cost

Gross Domestic Product at Factor Cost is the sum of net value added by all the producers in the d omestic territory of the country and the consumption of fixed capital during an accounting year.

10. Gross National Product at Factor Cost

Gross National Product at Factor Cost is the sum of factor cost of the product inclusive of depreciation attributable to the factors of production supplied by the normal resident of the country during a year and net factor income from abroad.

11. Net National Product at Factor Cost or National Income

National Income is the factor income in the form of wages, rent, interest and profit accruing to the Normal residents of the country in its domestic territory and rest of the world during a year. It is the sum of domestic factor income and net factor income from abroad.

NFIA

It refers to the difference between factor income earned by our normal residents from rest of the world and factor income earned by non-residents. It is a part of *NI*.

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Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. Define 'depreciation'. (*AI 2011*)
2. Define 'capital goods'. (*Foreign 2011, 12; Delhi 2012*)
3. Define consumption goods. (*AI 2012*)
4. Define stock variable. (*AI 2011; Delhi 2012*)
5. Define flow variable. (*Delhi 2011; AI, Foreign 2012*)
6. Give two examples of intermediate goods. (*AI 2013*)
7. Define domestic product. (*Foreign 2013*)
8. Define national income. (*Foreign 2013*)
9. Define national product. (*Foreign 2013*)

Multiple Choice Questions

1. Intermediate goods are:
   (*a*) Used for final consumption (*b*) Included in national income
   (*c*) Remain within the production boundary (*d*) None of the above
2. National income is also called:
   (*a*) *NNP* at factor cost (*b*) *GNP* at factor cost
   (*c*) *GDP* at factor cost (*d*) *GDP* at market price

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3. *GDP* at market price:
(*a*) Is a flow concept (*b*) Is at current prices
(*c*) Excludes transfer payments (*d*) All of the above

4. *GDP* excludes:
(*a*) Net factor income from abroad (*NFIA*)
(*b*) Depreciation
(*c*) Value added by multinational companies in India
(*d*) All of the above

5. NNP_{FC} = Domestic factor income + _____ :
(*a*) Net indirect tax (*b*) *NFIA* (*c*) Mixed income (*d*) Operating surplus

6. Domestic factor income include:
(*a*) Compensation of employees (*b*) Operating surplus
(*c*) Mixed income (*d*) All of the above

7. Net export is:
(*a*) Difference between export and import of a country during one year
(*b*) Difference between export and import of a country during six months
(*c*) Difference between export and import of a country during plan period
(*d*) None of the above

Short Answer Type Questions **(*3/4 Marks*)**

1. Give the difference between NNP_{FC} and NNP_{MP}.
2. Give the difference between GDP_{FC} and GDP_{MP}.
3. Give the difference between GDP_{FC} and NDP_{FC}.
4. Differentiate between NDP_{MP} and NNP_{MP}.
5. Distinguish between GNP_{MP} and NDP_{FC}.
6. Explain the distinction between domestic product and national product on the basis of concept of resident and domestic territory. (*Foreign 2007*)
7. Differentiate between GDP_{MP} and GNP_{MP}.
8. What are consumption goods and capital goods?
9. Distinguish between intermediate products and final products. Give examples. (*Delhi 2009*)
10. Give the meaning of factor income to abroad and factor income from abroad. Also give an example of each. (*AI 2009*)
11. Distinguish between domestic product and national product. When can domestic product be more than national product? (*AI 2009*)
12. Giving reasons, classify the following into intermediate and final goods: (*AI 2010*)
(*i*) Machines purchased by a dealer of machines.
(*ii*) A car purchased by a household.
13. Explain how distribution of gross domestic product is its limitation as a measure of economic welfare. (*Delhi 2010*)
14. Explain the basis of classifying goods into intermediate and final goods. Give suitable examples. (*Delhi 2010*)

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15. Giving reasons, classify the following into intermediate products and final products: (*Delhi 2011*)

(*i*) Computers installed in an office.

(*ii*) Mobile sets purchased by a mobile dealer.

16. Giving reasons, classify the following into intermediate products and final products: (*Delhi 2011*)

(*i*) Furniture purchased by a school.

(*ii*) Chalks, dusters, etc. purchased by a school

17. Giving reasons identify whether the following are final expenditures or intermediate expenditure: (*Delhi 2011*)

(*i*) Expenditure on maintenance of an office building

(*ii*) Expenditure on improvement of a machine in a factory.

18. Giving reason explain how should the following be treated in estimating national income:

(*i*) Expenditure on fertilizers by a farmer. (*Delhi 2012*)

(*ii*) Purchase of tractor by a farmer.

19. Should the following be treated as final expenditure or intermediate expenditure? Give reasons for your answer. (*AI 2012*)

(*i*) Purchase of furniture by a firm.

(*ii*) Expenditure on maintenance by a firm.

20. Giving reasons categorise the following into stock and flow: (*Delhi 2013*)

(*i*) Capital (*ii*) Saving

(*iii*) Gross domestic product (*iv*) Wealth

21. Distinguish between stocks and flows. Give two examples of each. (*AI 2013*)

Long Answer Type Questions **(*6 Marks*)**

1. What do you mean by stock and flow? Give difference between them.

2. Give eight important National Accounts aggregates. How are they calculated?

3. What is *NFIA*? Explain its components.

4. Differentiate between final and intermediate goods.

5. Distinguish between them and give suitable examples:

(*a*) Domestic product and national product.

(*b*) Intermediate product and final product.

6. Distinguish between: (*AI 2008*)

(*a*) Net domestic product and Gross national product.

(*b*) Intermediate product and Final product.

Answers

1. (*c*) **2.** (*a*) **3.** (*d*) **4.** (*a*) **5.** (*b*) **6.** (*d*) **7.** (*a*)

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Methods of Estimating National Income

2

Chapter Scheme

2.1 Circular Flow of Income
- 2.1.1 Meaning of Circular Flow
- 2.1.2 Types of Circular Flow
- 2.1.3 Significance of Circular Flow

2.2 Phases of Circular Flow
2.3 Circular Flow of Income in a Two-Sector Economy
2.4 Circular Flow of Income in a Two-Sector Economy With Financial System
2.5 Circular Flow of Income in a Three-Sector Economy
2.6 Circular Flow of Income in a Four-Sector Economy
2.7 Leakages *vs.* Injections
2.8 Classification of Industrial Sector
2.9 Domestic Income (Product) *vs.* National Income (Product)
2.10 Factor Income and Transfer Income
2.11 Methods of Measuring National Income
- 2.11.1 Income Method
- 2.11.2 Value Added Method
- 2.11.3 Expenditure Method
- 2.11.4 The Three Methods Reconciled
- 2.11.5 Solved Statement Questions on National Income

2.12 Important Formulae at a Glance
2.13 Solved Numerical Problems
- Points to Remember
- Test Your Knowledge
- Answers to MCQs

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2.1 CIRCULAR FLOW OF INCOME

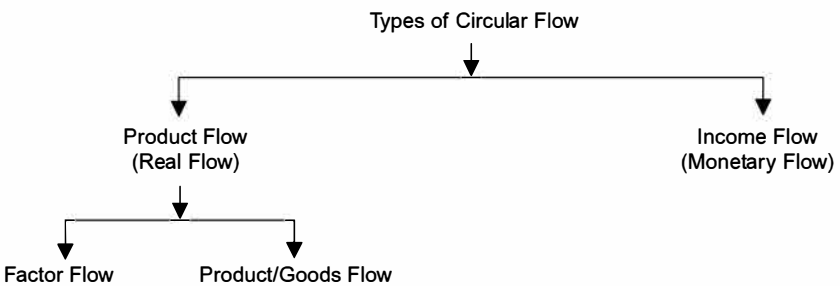
2.1.1 Meaning of Circular Flow

An economy is an integrated system of production, exchange and consumption. In carrying out these activities, people buy and sell goods and services. Income generated in the production process flows in a circular manner. It is circular because there is no beginning or an end.

Circular flow of income refers to flow of money income or the flow of goods and services across different sectors of an economy in a circular flow.

2.1.2 Types of Circular Flow

There are two types of circular flow. They are:



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1. **Product Flow.** It is also called output flow or real flow. **It refers to flow of factor services and flow of goods and services.** That is, it consists of:

   (*a*) Factor flow, *i.e.,* flow of factor services.

   (*b*) Product flow, *i.e.*, flow of goods and services.

2. **Income Flow.** It is also called money flow. In a monetised economy, **the flow of factor services generates money flows in the form of factor payments which take the form of income flow. The expenditure on goods and services take the form of expenditure flow.** Both income and expenditure flows move in a circular manner in an opposite direction. Money flows from hand to hand in much the same way as water flows through a pipe or electricity through a circuit.

2.1.3 Significance of Circular Flow

Circular flow of income is important due to the following reasons:

(*a*) Knowledge of Interdependence. Circular flow models help to understand interdependence between different sectors of the economy. For example, it tells the interdependence between producers and households.

(*b*) Size of National Income. The magnitude of circular flow determines the size of national income. More the magnitude more is the national income and vice versa.

(*c*) Level of Economic Activity. Circular flow, through its information on various macro variables, tells us about the level of economic activities in an economy.

(*d*) Injections and leakages. Circular flow gives us information on injections like investment, government spending, exports and leakages like saving, tax and imports.

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2.2 PHASES OF CIRCULAR FLOW

Production generates income, income gives rise to demand for goods and services and demand in turn gives rise to expenditure. Expenditure leads to further production. The flow of production, income and expenditure represents three related phases namely—Production, Distribution (or income) and Disposition (or expenditure). They are interlinked in a circular flow. It is shown in Fig. 2.1.

Production phase leads to production of goods and services in an economy. Income or distribution phase leads to generation of factor income, *i.e.*, rent + wages + interest + profit. Expenditure or disposition phase relates to spending of income in terms of consumption of goods and services and investment expenditure. This expenditure leads to further production or flow of goods and services. The three processes goes on simultaneously. Attempts have been made by various economists to measure national income in terms of production (value added), income and expenditure.

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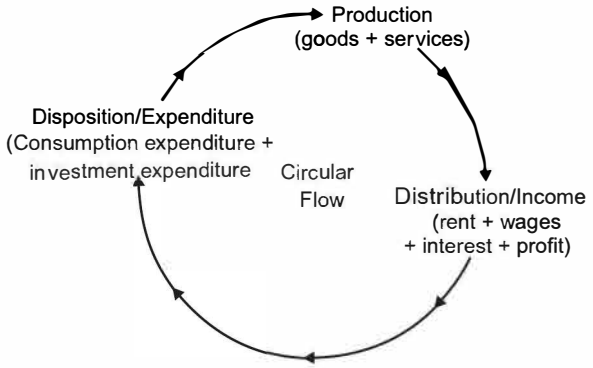


Fig. 2.1 The Circular Flow

2.3 CIRCULAR FLOW OF INCOME IN A TWO-SECTOR ECONOMY

To present the flows of income and expenditure, the economy is divided into two sectors: (*a*) **Household** sector, (*b*) **Firm** sector. It is a model of private closed economy.

Features of **household sector** are:

(*a*) They are owners of all factors of production.
(*b*) The total income received is wages plus rent plus interest plus profit.
(*c*) They are the consumers of goods and services, *i.e.*, they make consumption expenditure to the business sector.

Features of **firm sector** are:

(*a*) They hire factors of production from the household sector.
(*b*) They produce and sell goods and services to the households and receive income from them.
(*c*) They make factor payments to the household sector.

Fig. 2.2 shows the circular flow in a two-sector economy. The upper half shows the factor market and the lower half the commodity/product market. Each market generates two flows: a goods (or real) flow and money flow. Money flow is shown by a dashed or broken line. Each sector is a buyer and a seller.

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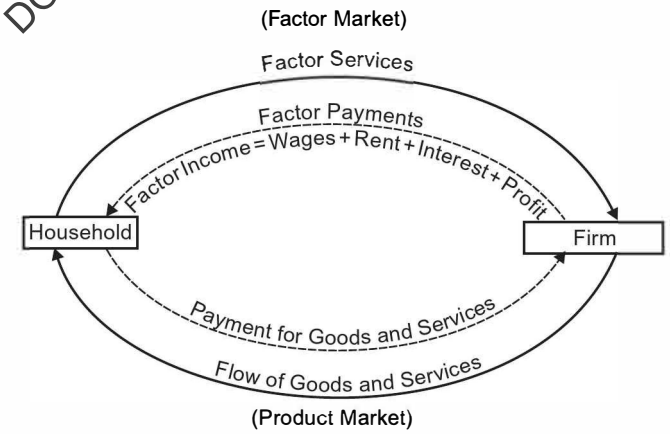


Fig. 2.2 Circular Flow of Income and Expenditure in a Two-Sector Economy

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Thus, in our simple economy,

1. Total production of goods and services by Firms = Total consumption of goods and services by Household sector.
2. Factor payments by Firms = Factor incomes of Households.
3. Consumption expenditure of Households = Income of Firms sector.
4. Real flow of production and consumption of Firms and Households = Money flow of income and expenditure of Firms and Households.

2.4 CIRCULAR FLOW OF INCOME IN A TWO-SECTOR ECONOMY WITH FINANCIAL SYSTEM

Financial system is essential for the working of the modern economy. Financial institutions are intermediaries between savers and investors.

Features of **financial system** are:

1. All savings by households go to the financial or money market.
2. Financial market invests this money by lending out to firms. Firms need money to finance new investment in plant and equipments.

In this case, *leakages* are savings by households and firms. But when firms borrow this money for investment purposes from financial system then they become *injections* into the circular flow. **Savings are leakages and investments are injections.** Important condition is that leakages must be equal to injections. Savings and investment are essential for capital formation in a country.

Fig. 2.3 shows circular flow with financial or money system.

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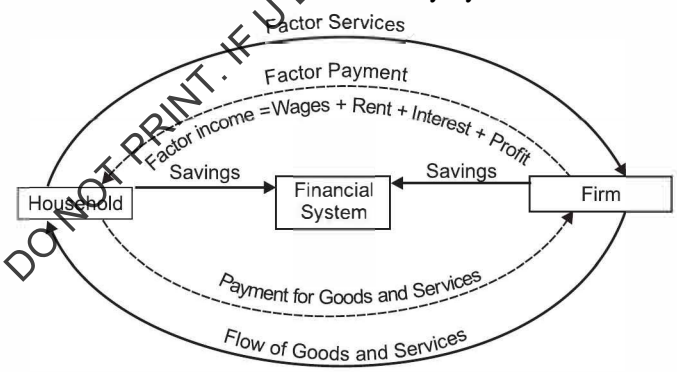


Fig. 2.3 Circular Flow in a Two-Sector Economy with Financial System

2.5 CIRCULAR FLOW OF INCOME IN A THREE-SECTOR ECONOMY

The three sectors of an economy are—Household, Firm and Government.

Features of **government sector** are:

1. Government sector receives direct taxes from the household sector and indirect taxes from the firm sector.
2. Government sector makes transfer payment to the household sector and gives subsidies to the business firm sector (like food subsidy, fertiliser subsidy, etc.).
3. Government's savings goes to the capital market and borrows from the financial system.

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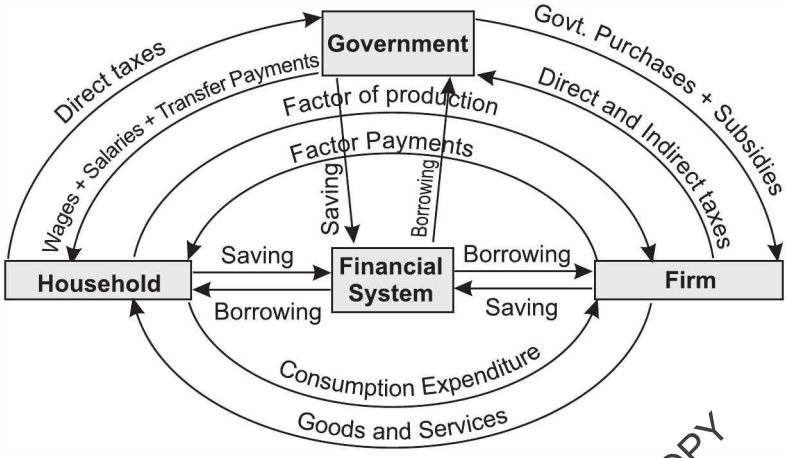


Fig. 2.4 Circular Flow of Income in a Three-Sector Economy

2.6 CIRCULAR FLOW OF INCOME IN A FOUR-SECTOR ECONOMY

Four-sector economy is an open economy. In an open economy, there are imports and exports with rest of the world. Today, all economies are open economies. The 4-sector circular flow model is shown in Fig. 2.5.

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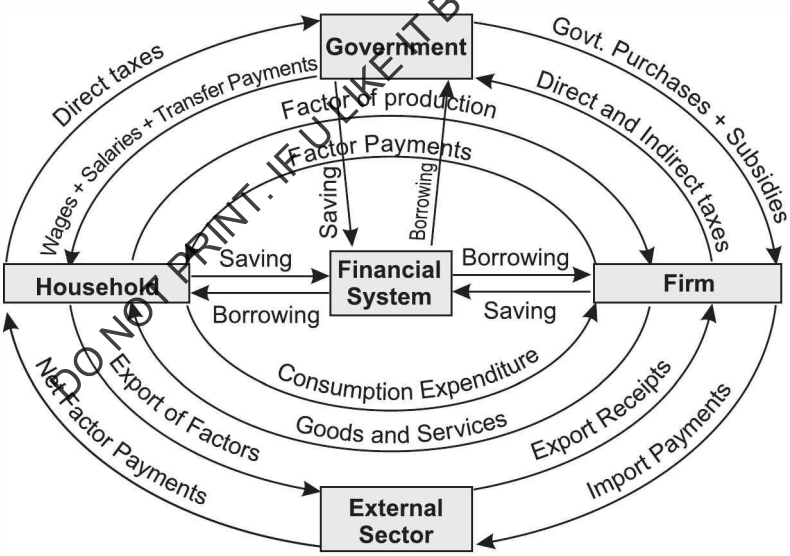


Fig. 2.5 Circular Flow of Income in a Four-Sector Economy

Features of external or rest of the world sector are:

1. External sector makes payment to the firm for its exports to rest of the world.
2. External sector gets payments for imports made to firm sector.
3. Household sector exports factor services to rest of the world sector.
4. External sector makes net factor payments to the household sector.

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2.7 LEAKAGES *vs.* INJECTIONS

Injections are additions to the circular flow of income. They increase the size of circular flow. They lead to expansion in the production process in an economy. Injections are (*a*) Investments, (*b*) Exports and (*c*) Government purchases.

Leakages are withdrawals from a circular flow of income. It reduces the size of circular flow. It leads to contraction in the production process in an economy. Contractions are: (*a*) Savings, (*b*) Taxes, and (*c*) Imports.

For stability in the circular flow of income,

Leakages ≡ **Injections** ..... ≡ denotes identity

or $S + T + M \equiv I + G + X$ ..... in a 4-sector economy

or [Savings + Taxes + Imports] ≡ [Investment + Government Purchases + Exports]

2.8 CLASSIFICATION OF INDUSTRIAL SECTOR

It means grouping production units into distinct industrial groups, or sectors. This is the first step required to be taken in estimating national income, irrespective of the method of estimation. It is statistically more convenient to estimate national income originating in a group of similar production units rather than for each production unit separately.

It is now a matter of general practice to group all the production units of the economic territory into three broad groups—primary sector, secondary sector, and tertiary sector. Each of these sectors can be further subdivided into smaller groups depending upon the requirement. Let us now explain each sector.

Primary Sector. Primary sector includes production units exploiting natural resources like land, water, subsoil assets, etc. Growing crops, catching fish, extracting minerals, animal husbandry, forestry, etc. are some *examples.* The word 'primary' means 'of first importance'. It is primary because it is a source of basic raw materials for the secondary sector.

Secondary Sector. Secondary sector includes production units which are engaged in transforming one good into another good. Such an activity is called **manufacturing activity.** These units convert raw materials into finished goods. Factories, construction, power generation, water supply are the *examples.* It is called secondary because it is dependent upon the primary sector for raw materials.

Tertiary Sector. Tertiary sector includes production units engaged in producing services. Transport, trade, education, hotels and restaurant, finance, government administration, etc. are some *examples.* This sector finds third place because its growth is primarily dependent upon the primary and secondary sectors.

2.9 DOMESTIC INCOME (PRODUCT) *vs.* NATIONAL INCOME (PRODUCT)

The concept of domestic product is based on the production units located within economic territory, operated both by residents and non-residents. The concept of national product

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is based on residents and includes their contribution to production both within and outside the economic territory. Normally, in practical estimates, domestic product is estimated first. National product is then derived from the domestic product by making certain adjustments. Let us see how.

National product is derived in the following way:

National product = Domestic product + Residents' contribution to production outside the economic territory − Non-residents' contribution to production inside the economic territory.

In practical estimates the residents' contribution outside the economic territory is called "factor income received from abroad". The non-residents' contribution inside the economic territory is called 'factor income paid to abroad.' Therefore,

National product = Domestic product + Factor income received from abroad − Factor income paid to abroad.

Factor income received from abroad is added to domestic product because this contribution of residents is in addition to their contribution to domestic product. 'Factor income paid to abroad' is subtracted because this part of domestic product, does not belong to the residents. By subtracting factor income paid from "factor income received" from abroad, we get a net figure "Net factor income from abroad" popularly abbreviated as *NFIA*.

National product = Domestic product + Net factor income from abroad.

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2.10 FACTOR INCOME AND TRANSFER INCOME

Factor Income

Factor income refers to income received by factors of production for rendering factor services in the production process.

- It is received for providing factor services of land, labour, capital and enterprise.
- Factor income of normal residents of a country is included in the national income.
- *Examples.* Rent, wages, interest and profit.

Transfer Income

Transfer income refers to income received without rendering any productive service in return.

- It is a one-sided concept.
- It is not included in national income as it does not reflect any production of good and services.
- It can be received either within the domestic territory of a country or from abroad.
- *Examples.* Old age pension, scholarship, unemployment allowance, pocket money, etc.

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2.11 METHODS OF MEASURING NATIONAL INCOME

National Income is the sum of factor income accruing to the residents of a country from their participation in production activity both within and outside domestic territories. It is NNP_{FC}.

The circular flow of creation, distribution and spending of income is taking place simultaneously in an economy, *i.e.,* income is created, then distributed, then spent and then created and so on. **Each way of looking at *NI* suggests a different method of calculation. In India, Central Statistical Organisation measures national income at these three points.** The three methods of measuring national income are:

1. Income method
2. Value added or production method
3. Expenditure method.

The three methods give three different angles of looking at the income flow based on different types of data. Income method measures relative contribution of factor owners. Value added method measures the contribution of production units to total output of an economy. Expenditure method measures the relative flow of consumption and investment expenditures.

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2.11.1 Income Method

Meaning and Composition of NI by Income Method

According to income method, *NI* is measured in terms of payments made to primary factors of production.

Net Value Added at Factor Cost or NVA_{FC} = Sum total of factor incomes paid out by a production unit.

NDP_{FC} = Sum total of factor incomes paid out by *all* production units located within the domestic territory of a country. It is shared by both residents and non-residents.

NNP_{FC} or *NI* = Sum total of factor incomes paid out to residents only.

According to Paul Studenski, "National Income of a country can be calculated either by taking the sum of incomes paid out by the producing units or by the income received by the factors."

Income method is also called **Factor Payment Method or Distributed Share Method.** According to income method, the components of *NI* are given by the formula.

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***NI* or NNP_{FC}** = 1. Compensation of employees
+ 2. Operating surplus (rent + royalty + interest + profit)
+ 3. Mixed income of self-employed
+ 4. Net factor income from abroad.

NDP_{FC} or Domestic Factor Income = 1 + 2 + 3

System of National Accounts 1993, a joint publication of the United National and the World Bank, has elaborated the above components and recommended their use by all the countries in preparing national income estimates.

Steps Involved in Calculating NI by Income Method

The calculation of *NI* by income method is done in three steps. They are:

Step 1. **Identification and classification of producing enterprises which employ factor inputs**

This is the first step in income method. It requires:

(*a*) *Identifying* the producing enterprises which employ the factor inputs and

(*b*) *Classifying* the producing enterprises. All producing enterprises can be classified under three heads:

(*i*) Primary Sector. It is that sector which produces goods by exploiting natural resources like land, water, forests, mines, etc. This sector includes agricultural and allied activities, fishing, mining and quarrying.

(*ii*) Secondary Sector. It is also called manufacturing sector. Enterprises in this sector transform one type of commodity into another type of commodity. *For example*, leather goods from leather, flour from wheat, sugar from sugar cane, etc.

(*iii*) Tertiary Sector. It is also known as service sector. Enterprises in this sector produce services only. *Examples* are: banking, transport, communications, trade and commerce, etc.

Step 2. **Classification of Factor Income**

Factor income or payments are classified into the following groups:

(*a*) Compensation of employees

(*b*) Operating surplus

(*c*) Mixed income

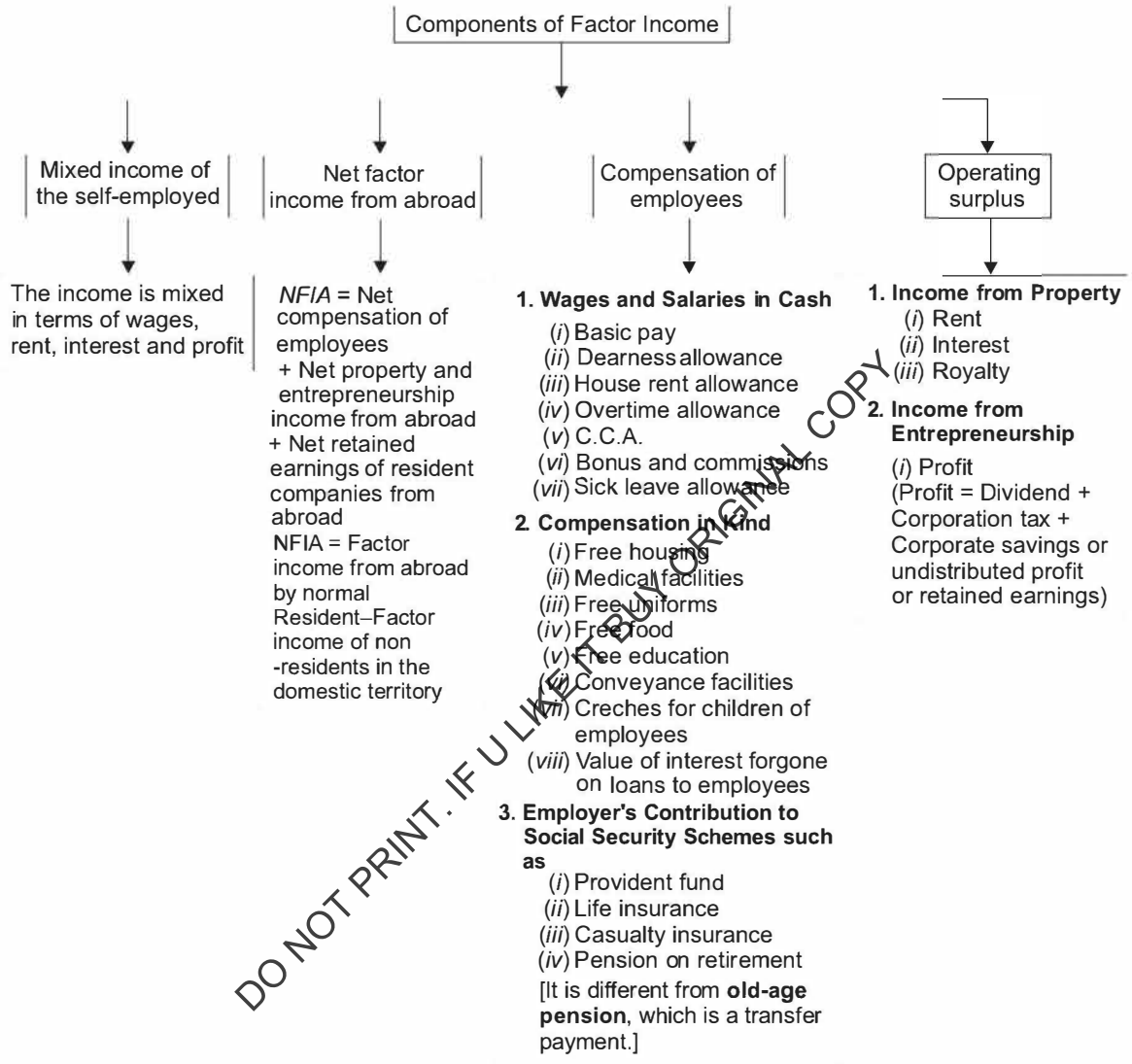
(*d*) Net factor income from abroad.

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Fig. 2.6 gives the items included in each component of factor income.



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Fig. 2.6 Components of Factor Income

Step 3. **Estimation of national income**

The last step is to estimate or calculate national income.
Fig. 2.7 shows how they are related and estimated.

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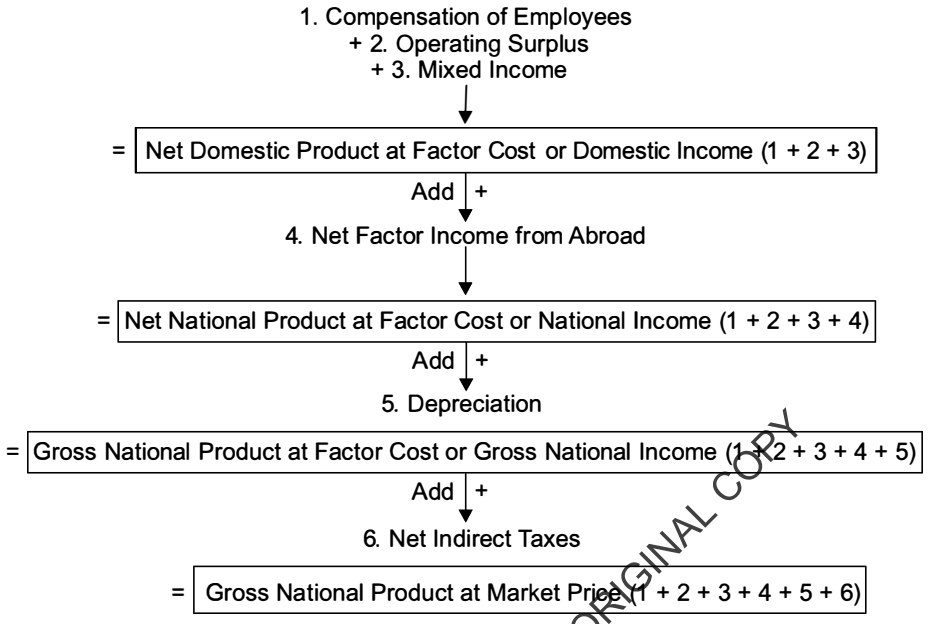


Fig. 2.7 Measurement of *NI* by Income Method

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Precautions Involved in Estimating NI by Income Method

Any income corresponding to which there is no flow of goods and services or value added, should not be included in calculation of national income.

Precautions to be taken while calculating factor incomes are as follows:

1. **Transfer Payments.** Transfer payments should not be included in the national income because transfers are not a productive activity. *Examples* are: scholarships, old-age pensions, gifts, etc. These are unilateral payments. There is no flow of goods and services in an economy with these payments. A distinction is made between **old-age pension and retirement pension.** Old-age pension is a welfare measure and falls under the category of transfer payment. Retirement pension (or private pension) on the other hand is the payment for services rendered in the past. It is a part of compensation of employees.
2. **Illegal Income.** Income through illegal activities, like smuggling, black marketing, theft, dacoity, gambling, etc., is not included in the national income. Income earned only by way of legal activities is included.
3. **Income from the Sale of Second-hand Goods or Capital Gains.** Income or money received by way of selling second-hand goods or financial assets, *for example*, old scooter, old house, old radio, bonds, debentures etc., is not included in the national income. The reason is that the value of their original sale has already been counted in the year of their respective purchase. At present there is only a change in the ownership of the second-hand goods. It is important to note that brokerage or commission paid to the brokers or commission agents on the sale and purchase of such goods, if any, is included, because new factor income is generated.
4. **Corporation Tax and Income Tax.** Since corporation tax is a part of profit, it should not be separately included in the national income. Instead, profit (before deduction of

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corporation tax) have to be included. It is important to note that compensation of employees includes income tax. Thus, income tax paid by the employees should not be included separately.

5. **Indirect Taxes.** Indirect taxes (*i.e.,* tax on production or sale of the commodities) tend to raise the market price of goods and services. Hence, these are included in the national income at market price.
6. **Include Free Services Provided by the Owners of the Production Units.** Owners work in their own unit but not charge salary. Owners provide finance but do not charge any interest. Owners do production in their own buildings but do not charge rent. Although they do not charge, yet the services have been performed. The imputed value of these must be included in national income.
7. **Windfall Gains.** In the national income, windfall gains, *for example*, income from lotteries is not included. It is unearned income.
8. **Wages and Salaries in Cash and in Kind.** As compensation of employees is included in estimation of national income, any figures on wages and salaries in cash or in kind should not be separately added.
9. **Domestic Services.** Domestic services provided out of love and affection are not included. But if the same are provided by the paid employed staff such as cooks, gardeners, guards, etc., they will be included in the national income.
10. **Imputed Rent of Owner-occupied Houses.** Rent of owner-occupied houses should be calculated on the basis of prevailing market price and included in the national income. When a house owner lives in that house, he does not pay any rent. But in fact he pays rent to himself. Since rent is a payment for services rendered, even though rendered to the owner himself, it must be counted as a factor payment.
11. **Death Duties, Gift Tax, Wealth Tax, etc.** Death duties, gift tax, wealth tax, etc. are paid out of the wealth or past savings of the tax-payers. Hence, they should not be included in the national income.

Table 2.1 summarises items included and excluded in *NI* calculation according to income method.

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Table 2.1 **Items Included and Excluded in *NI* Calculation**

Items Included	Items Excluded
1. Wages received by Indian employees working in American Embassy in India (it is an earned income).	1. Profit earned by foreign banks in India.
2. Medical facilities to government employees (it is a supplementary income).	2. Windfall gains and lottery income (there is no increase in production).
3. Income of actors, singers, artists, salary of defence personnel.	3. Money received from a relative working in foreign country (it is a transfer payment).
4. Bonus (it is part of *COE*).	4. Capital gains (there is no increase in production).
5. Commission received by a dealer of old scooter (it is productive service).	5. Death duty, gift tax or wealth tax (they are paid out of past savings or wealth).

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6. Interest received by a household from a commercial bank (it is factor income).	6. Income from sale of an old car (it is not current production).
7. Free meals to workers (wage in kind).	7. Unemployment allowance (transfer payment).
8. Undistributed profit and corporation tax (part of profit).	8. Old-age pension (transfer payment).
9. Allowance of a member of parliament (parliament is a general govt. enterprises).	9. Scholarship (transfer payment). Remittances by a NRI to his family in India (Transfer payment).
10. *NFIA* (it is earning of normal residents of a country from abroad).	10. Gifts to Red Cross Society (transfer payment).
11. Money received from a worker working abroad by his family for a period of *less than one year.*	11. Smuggler's income, gambling (illegal money.)
12. Payment of retirement of pension (part of *COE*).	12. Money received from a worker working abroad by his family for a period of more than ony year.
13. Income from self-consumed output (*e.g.* house).	
14. Free services provided by owners of the production units.	

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Illustration 1. Calculate: (*a*) NDP_{FC}, (*b*) NNP_{FC} or *NI* (*c*) NNP_{MP} (*d*) GDP_{MP} using income method.

Items	**₹ (in crores)**
1. *COE*	2000
2. Rent	20
3. Interest	30
4. Royalty	40
5. Profit	50
6. Mixed income of self-employed	1000
7. *NFIA*	(–)3
8. Indirect taxes	500
9. Subsidies	400
10. Depreciation	260

Solution.

(*a*) NDP_{FC} = *COE* + Operating surplus + Mixed income

= *COE* + (Rent + Interest + Royalty + Profit) + Mixed income

= 2,000 + (20 + 30 + 40 + 50) + 1000

= ₹ 3,140 crores.

(*b*) NNP_{FC} = NDP_{FC} + *NFIA*

= 3,140 + (−3) = ₹ 3,137 crores

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(*c*) NNP_{MP} = NNP_{FC} + Indirect taxes − Subsidies
= 3,137 + 500 − 400 = ₹ 3,237 crores.

(*d*) GDP_{MP} = NDP_{FC} + Depreciation + Net indirect taxes
= 3,140 + 260 + 100 = ₹ 3,500 crores.

Illustration 2. Using the income method calculate: (*a*) Domestic Income, (*b*) National Income.

Items	₹ (in crores)
1. Wages	50
2. Direct tax	500
3. Transfer payments	120
4. *NFIA*	1,000
5. Social security contributions	60
6. Rent	10
7. Interest	20
8. Corporation tax	30
9. Dividend	35
10. Undistributed profit	40
11. Mixed income	200

Solution.

(*a*) Domestic Income = *COE* + Operating surplus + Mixed income
= (Wages + Social security contributions) + [(Rent + Interest + (Corporation tax) + Dividend + Undistributed profit)] + Mixed income
= [50 + 60] + [10 + 20 + (30 + 35 + 40)] + 200
= 110 + 135 + 200 = ₹ 445 crores.

(*b*) National Income = Domestic income + *NFIA*
= 445 + 1,000 = ₹ 1,445 crores.

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2.11.2 VALUE ADDED METHOD (OR PRODUCT OR OUTPUT METHOD)

Concept and Measurement of Value Added

In the computation of national income, **value added** by different enterprises is included and **value of output** is not included. Thus, it is crucial to differentiate between these two concepts.

(*a*) Value of Output

Value of output is estimated at current prices prevailing in the market. It is called value of output at market price. Value of output can be defined in two ways:

(*i*) Value of outputs of a ***firm*** is the market value of all goods and services produced by it during an accounting year. It is obtained by multiplying quantity of output by its market price.

Value of output = Quantity × Price

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(*ii*) Value of output of a firm is the sum total of the value of sales of the firm during the year plus the value of change in stock in an accounting year.

Value of output = Sales + Change in stock
= Sales + (Closing Stock − Opening Stock)

Value of output is ***not*** included in national income computation.

(*b*) Value Added

Production units produce goods and services. For this purpose a production unit purchases primary factor inputs (land, labour, capital and entrepreneurship) and secondary factor inputs (raw materials, etc.). Value added is then the excess of the value of output produced over the value of secondary inputs.

Value added = Value of output − Value of secondary inputs
or **Value added** = Value of output − Value of intermediate consumption
or **Value added** = (Sales + Change in Stock) − Intermediate consumption
Domestic product or Domestic income = Sum total of value added by all producing enterprises within the domestic territory

(*c*) Types of Value Added

There are two types of value added:

(*a*) Value added at market price.

(*b*) Value added at factor cost.

Value added at market price

(*i*) Gross Value Added at Market Price. The value of goods used for intermediate consumption was not produced but purchased by the enterprise from some other enterprises. For instance, a farmer purchases intermediate inputs like seeds, manures, fertilisers, insecticides from other enterprises. Therefore, to find out the contribution of the enterprise to the current flow of goods and services, we have to deduct the value of intermediate consumption from the value of output. By doing so, we get Gross Value added at market price by the enterprise. Gross value added is defined as value of gross output less value of intermediate consumption.

Gross value added at MP = Value of Output − Value of intermediate consumption

(*ii*) Net Value Added at Market Price. An enterprise uses raw materials and factors and produces commodities. The value of these commodities is the Gross Value of output at market price. If the value of intermediate output is deducted from the gross value of output at market price, we obtain gross value added at *MP*. If the value of consumption of fixed capital (depreciation) is deducted from Gross Value added at *MP*, we get Net Value Added at *MP*.

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Net Value Added at MP = Gross value added at market price − Consumption of fixed capital

Value added at factor cost

(*i*) Gross Value Added at Factor Cost. If net indirect taxes are deducted from gross value added at market price, then gross value added at factor cost is obtained.

Gross Value Added at Factor Cost = Gross value added at market price

(or Gross Domestic Product at Factor Cost)

(*ii*) Net Value Added at Factor Cost. From the net value added at MP deduct net indirect taxes, we get net value added at factor cost.

Net Value Added at FC = Net value added at market price − Net indirect taxes

(*d*) Difference between Value of Output, Value Added and Income Generated

The point of distinction between value of output and value added is the value of intermediate goods and services. Value of output includes it and value added excludes it.

1. **Gross Value Added at Market Price** = Value of output − Intermediate consumption
2. If value of output is taken in the computation of national income, it would lead to the problem of double counting.

Meaning and Composition of *NI* by Value Added Method

Product method or Value Added method is also called ***Industrial Origin*** method or **Net Output** method. Value Added method is defined as that method ***which measures the national income by estimating the contribution of each producing enterprise to production in the domestic territory of the country in an accounting year.***

According to the value added method, the composition of National Income is as follows:

National Income = Sum total of net value added at factor cost across all producing units of an economy

***NI* by Value Added** = 1. Gross value added by Primary Sector within the domestic territory
+ 2. Gross value added by Secondary Sector within the domestic territory
+ 3. Gross value added by Tertiary Sector within the domestic territory
− 4. Depreciation
− 5. Net Indirect Taxes
+ 6. Net Factor Income from Abroad

Steps Involved in Calculating NI by Value Added Method

The calculation of *NI* by value added method is done in three steps. They are:

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Step 1. **Identification and Classification of Producing Enterprises**

This is the first step in value added method. As in income method, producing enterprises are classified into three heads:

(*i*) Primary sector

(*ii*) Secondary or manufacturing sector

(*iii*) Tertiary or service sector.

Step 2. **Estimation of Gross Value Added**

Value added is the market value of only final goods and services. Value of output is excess of value added over and above the value of intermediate consumption.

$$\begin{aligned} \text{Gross value added } (GVA) &= \text{Value of output} - \text{Intermediate consumption} \\ &= [\text{Sales} + \text{Change in stock}] - \text{Intermediate consumption} \end{aligned}$$

If intermediate consumption is not subtracted from the value of output, it would lead to the problem of *double counting*.

Step 3. **Estimation of National Income**

The last step in calculation of *NI* by value added method is shown in Fig. 2.8.

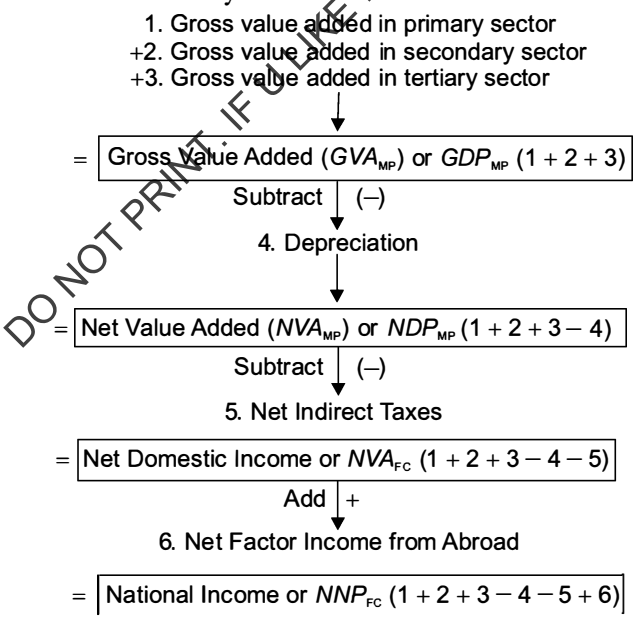


Fig. 2.8 Measurement of *NI* by Value Added

Problem of Double Counting

While estimating national income by value added method, sometimes the value of a product is counted more than once. It is called **double counting**. It leads to over estimation of national income. For example, suppose a farmer produces 5 quintals wheat. He sells

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this wheat to the baker at a price of ₹1000 per quintal. The value of wheat becomes ₹ 5000 (*i.e.*, 1000 × 5). Baker converts this wheat into breads and sells the same to a grocer for ₹ 10000. The grocer sells these breads to ultimate consumers for ₹ 12000. Here we take an unrealistic assumption that farmer uses no intermediate inputs. The total value of all these transactions or gross output is ₹ 27000 (5000 + 10000 + 12000) in which value of wheat has been counted three times and value of breads two times.

It is the case of double counting.

How to avoid double counting?

There are two alternative methods or ways of avoiding double counting:

1. **Value Added Method.** According to this method, first of all identify intermediate consumption of each producing unit and then calculate value added by each producing unit at each stage of production by using the following formula:
   Value added = value of output − intermediate consumption

S.No.	Production unit	Value of output	–	Intermediate consumption	= Value Added
1.	Farmer	5,000	–	0	= 5,000
2.	Baker	10,000	–	5,000	= 5,000
3.	Grocer	12,000	–	10,000	= 2,000
	Total	27,000		15,000	= 12,000

   Thus, value added by all three producing units is ₹ 12,000 (*i.e.*, ₹ 5000 by farmer + ₹ 5000 by baker + ₹ 2000 by grocer). There is no scope of double counting in this method.

2. **Final Product Approach.** According to this method, we should take the value of final product only. Final products are those products which are purchased by **consumers for consumption** or **purchased by firms** (Producing units) **for investment**. In our example, only the value of output of grocer *i.e.*, ₹ 12,000, is the final product. It is because he sells his entire output to consumers. Therefore, according to this method the value of final product is ₹ 12000.

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Precautions Involved in Calculating NI by Value Added Method

The following precautions should be taken while measuring national income by product method:

(*i*) The sale and purchase of **second-hand goods,** should not be included in national income because it is not a productive activity. But commission, or brokerage paid to facilitate the sale of such goods is a fresh productive activity and should be included.

(*ii*) The value of **intermediate goods** should also not be included in national income. Only the value of final goods should be included.

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(*iii*) The value of goods **retained for self-consumption** should be included, *e.g.* farmer consumes his own produce.

(*iv*) Imputed value of **owner-occupied house** should be included.

(*v*) **Own account production** of fixed capital by households, firms and the government should be included.

(*vi*) **Domestic services** are not included in national income. However, production of services by paid employed persons should be included.

(*vii*) **Voluntary work done** for its own sake or for the community should be excluded.

Table 2.2 summarises the items included and excluded in calculation of *NI* by Product Method.

Table 2.2 **Items Included and Excluded in *NI* Estimation by Value Added Method**

Items Included	Items Excluded
1. Service of free govt. dispensary (it is a productive service).	1. Receipt from sale of land (it does not add to national product).
2. Mineral wealth of a country extracted in the current year.	2. Mineral wealth of a country extracted in the past year.
3. Domestic services by paid staff.	3. Increase in price of stocks with trader (it will not add to increase in output).
4. Depreciation.	4. Sale of shares (these are financial transactions).
5. Rent paid by the tenant.	5. Purchase of rented house by the tenant.
6. Own account production of fixed capital (it is a part of final investment expenditure).	6. Gifts from abroad (they are transfer payment).
7. Self–consumption output.	7. Value of intermediate goods (it will lead to double counting).
8. Final goods.	8. Sale of second-hand goods (it will lead to double counting).

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Illustration. Calculate by Value Added Method (*a*) GVA_{MP} (*b*) *NI*.

Items	**₹ (in thousands)**
1. Value of output by Primary Sector	40
2. Value of output by Secondary Sector	20
3. Value of output by Tertiary Sector	25
4. Value of output purchased by Primary Sector	20
5. Value of output purchased by Secondary Sector	10

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6. Value of output purchased by Tertiary Sector 15
7. *NFIA* 50
8. Net Indirect Taxes 8
9. Depreciation 12

Solution.

(*a*) GVA_{MP} = Value of output by different sectors − Value of intermediate inputs
= (1) + (2) + (3) − [(4) + (5) + (6)]
= (40 + 20 + 25) − (20 + 10 + 15)
= 85 − 40 = ₹ 40 thousands.

(*b*) NNP_{FC} or *NI* = GDP_{MP} − Depreciation − Net indirect taxes + *NFIA*
= GDP_{MP} − (9) − (8) + (7) = 40 − 12 − 8 + 50
= ₹ 70 thousands.

2.11.3 Expenditure Method

Meaning and Composition of NI by Expenditure Method

The expenditure method of measuring National Income is also called ***Income Disposal*** *method* or ***Consumption and Investment*** *method.* Expenditure method is a method ***which measures the final expenditure on gross domestic product at market price during an accounting year. This total final expenditure is equal to the gross domestic product at market price.***

According to expenditure method, GDP_{MP} is the aggregate of all the final expenditure in an economy during a year, *i.e.*,

$$Y = C + I + G + (X - M)$$

where ,

Y = National Income
C = Private Final Consumption Expenditure
I = Final Investment Expenditure or Capital Formation
G = Government Final Consumption Expenditure
$X - M$ = Net exports (X stands for exports and M stands for imports).

According to the expenditure method, *composition* of GDP_{MP} is as follows:

1. Private final consumption expenditure
2. Government final consumption expenditure
3. Government fixed investment
4. Business fixed investment
5. Investment on residential construction
6. Inventory Investment or Change in Stock (*i.e.*, Closing stock − Opening stock)
7. Net Exports (Exports − Imports).

GDP_{MP} by expenditure method = 1 + 2 + 3 + 4 + 5 + 6 + 7

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Steps Involved in Calculating NI by Expenditure Method

The calculation of *NI* by expenditure method is done in **three** steps:

Step 1. **Identification of Economic Units Incurring Final Expenditure**

There are four categories of economic units which incur final expenditure within the domestic territory of a country. They are:

(*a*) Household Sector (*b*) Production Sector

(*c*) Government Sector (*d*) Rest of the World Sector.

Step 2. **Classification of Final Expenditure**

The final expenditure is classified into the following three kinds:

1. Final Consumption Expenditure:
   (*a*) Private Final Consumption Expenditure.
   (*b*) Government Final Consumption Expenditure.
2. Gross Domestic Capital Formation:
   (*a*) Gross Domestic Fixed Investment or Gross Domestic Fixed Capital Formation.
   (*b*) Inventory Investment or Change in Stock.
3. Net Exports.

Fig. 2.9 shows the classification of final expenditure under the three categories.

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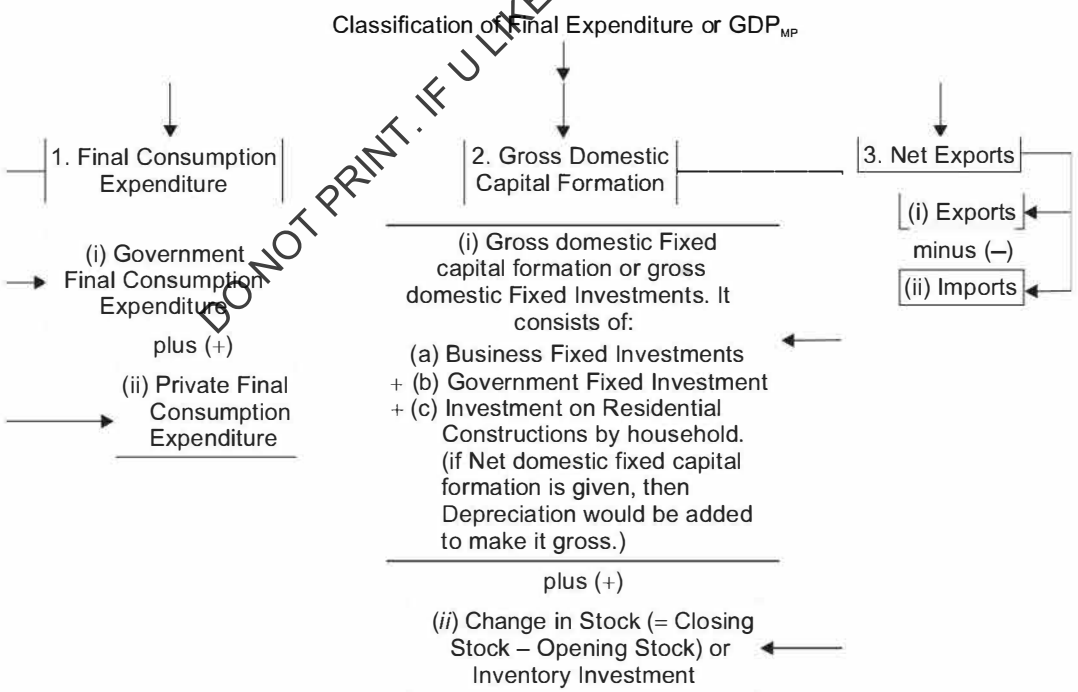


Fig. 2.9 Classification of Final Expenditure or GDP_{MP}

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The measurement of three components is as follows:

1. **Final Consumption Expenditure.** It comprises of private final consumption expenditure and general government final consumption expenditure.

   (*a*) Private Final Consumption Expenditure. To measure private final consumption expenditure, the volume of final sales of the durable goods, semi-durable goods, non-durable goods and services to the consumer household and non-profit institutions serving households is multiplied by retail prices. The direct purchases of non-resident household made abroad are added. The direct purchase of non-resident households in the domestic market is not added.

   Items included in the measurement are:

   (*i*) Purchases of currently produced goods and services (except houses) in the domestic market.

   (*ii*) Purchases made by resident households abroad.

   (*iii*) Wages and salaries received in kind.

   (*iv*) Value of production (at prevailing market rate) meant for self-consumption should be added to private final consumption expenditure.

   (*v*) Imputed rent of owner-occupied houses should also be included in private final consumption expenditure.

   (*vi*) Market purchases of currently produced goods and services.

   (*b*) General Government Final Consumption Expenditure. Government final consumption expenditure is estimated as the total expenditure incurred by the government for producing various services (like health, education, defence) to satisfy collective wants.

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The value of government final consumption expenditure is the sum total of the following items:

(*a*) Compensation of employees paid by the government.

(*b*) Goods and services purchased by the government from domestic market (*i.e.*, intermediate goods).

(*c*) Purchases from abroad.

Note. Tuition fees in schools or nominal charges in government hospital has to be deducted from the sum of all above-mentioned three items.

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2. Gross Domestic Capital Formation. It includes expenditure on the purchase of final goods by the producers. The investment expenditure is of two kinds:

(*a*) Gross Domestic Fixed Investment and (*b*) Inventory Investments.

(*a*) Gross Domestic Fixed Investment or Gross Domestic Fixed Capital Formation. It refers to expenditure on purchasing *fixed assets* (like machinery) by producers. Fixed Investment is of three kinds:

(*i*) Business Fixed Investment.

(*ii*) Government Fixed Investment.

(*iii*) Investment on Residential construction by Households: To measure the expenditure on construction, the volume of material inputs like steel, cement, bricks and labour is multiplied by the price paid by the builders. This is called *commodity flow* approach. Expenditure on new construction also includes own-account production of fixed assets, purchase of new houses by households and work in progress of major repairs and alterations in old buildings.

(*b*) Inventory Investment. The expenditure on change in stock is measured by multiplying the volume of physical change in stock with the market prices of the stock. The change in stock is estimated by subtracting opening stock from closing stock, *i.e.*,

Change in Stock = Closing Stock − Opening Stock

Note. Increase in stock with consumer are not included, as all consumer goods are treated as consumed the moment the consumer acquires them.

3. Net Exports. Net exports is the difference between exports and imports of a country during the period of one year. It can be positive or negative. It is a part of domestic product.

Net Export = Exports − Imports

(*i*) Exports. They are defined as goods (like jute, tea, etc.) and non-factor services (like insurance, shipping, banking, etc.) *sold* by one country to the other. These are included in our domestic product.

(*ii*) Imports. They are defined as *purchase* of goods and non-factor services from rest of the world. These are not included in our domestic product.

Net Foreign Investment = Net Exports + *NFIA*

= (Export − Import) + *NFIA*.

Fig. 2.10 shows how *NI* is calculated by expenditure method.

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Step 3. **Estimation of *NI* by Expenditure Method**

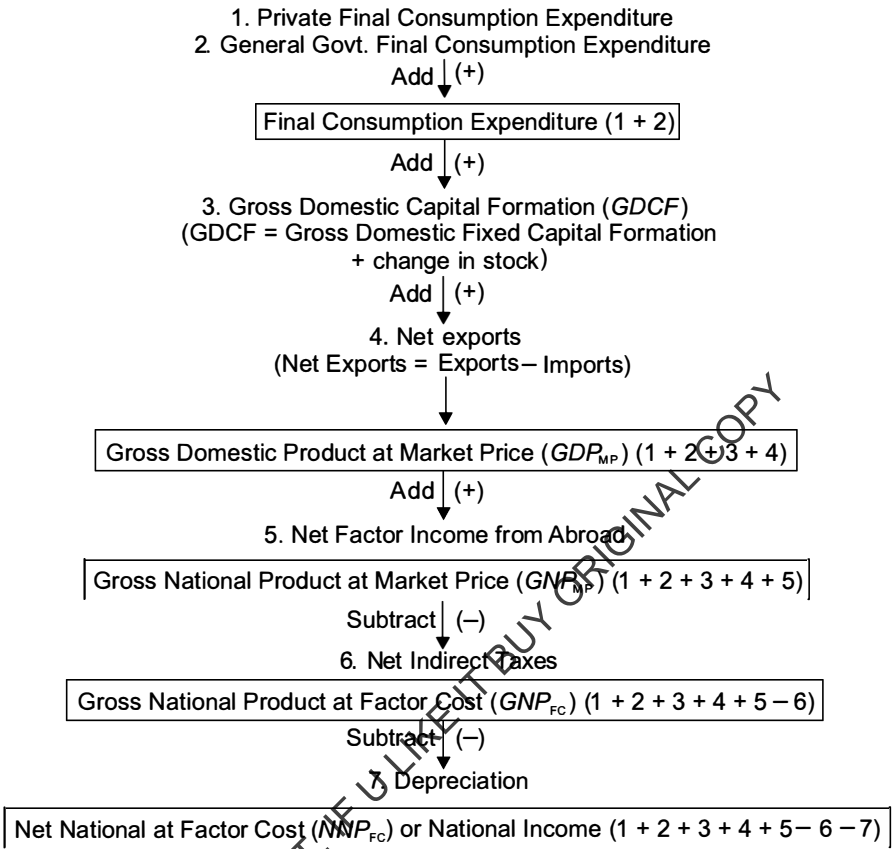


Fig. 2.10 Measurement of NI by expenditure method

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Precautions Involved in Calculating NI by Expenditure Method

The precautions to be taken while calculating national income by expenditure method are:

1. **Final expenditure** is to be included to avoid double counting. Final expenditure is expenditure on consumption and investment.
2. **Intermediate expenditure** like on raw materials, etc. is not included in the calculation of national income.
3. **Expenditure on second-hand goods** is not included as they have already been included when they were purchased originally.
4. **Expenditure on shares and bonds** is not included because buying financial asset is not a production activity because financial assets are neither goods nor services.
5. **Gross investment** is included in total expenditure. Gross investment includes replacement investment and net investment.

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6. **Expenditure on transfer payments** by the government is excluded in total expenditure because transfer payment is a payment against which no services are rendered therefore, no production takes place.
7. **Self-use of own produced final products.** For example, a house owner using the house for self. Although explicitly he does not incur any expenditure, implicitly he is making payment of rent to himself. Since the house is producing a service, the imputed value of this service must be included in national income.

Table 2.3 lists certain items which are included and those which are not included in calculation of *NI* by expenditure method.

Table 2.3 **Items Included and Excluded in *NI* Calculation by Expenditure Method**

Items Included	Items Excluded
1. School fees paid by students (These are payments for services rendered).	1. Purchase of vegetables by a restaurant. (It is intermediate consumption).
2. Payment of electricity bill by a household (It is a private final consumption expenditure).	2. Inventories (It is a stock concept).
3. Change in stock (It is a flow concept).	3. Expenditure on purchase of shares of a company (They are paper items).
4. Government expenditure on defence (It is government final consumption expenditure).	4. Scholarship paid to students (It is a transfer payment).
5. Payment of bus fare by a traveller (It is a private final consumption expenditure).	5. Expenditure on purchase of an old house (Its value has been included when it was originally purchased).
6. Expenses of foreign visitors in India (It is a part of net exports).	6. Expenditure on electricity by a factory (It is factory's intermediate consumption).
7. Expenditure on road construction (It is a part of *GDFCF*)	7. Gifts from rest of the world (Transfer payment).
8. Government expenditure on street lighting (It is a part of government final consumption expenditure).	8. Payment of loan instalment taken for marriage (It does not affect national product).
9. Expenditure on marriage of a daughter by father (It is a household final consumption expenditure).	9. Payment of pocket money to children by father (It is not a reward for any productive service).
10. Free meals given to employees (It is part of compensation of employees).	10. Expenditure on earthquake/flood victims (It is a transfer payment). 11. Expenditure on providing meals to workers (It is firm's intermediate consumption expenditure). 12. Expenditure on improvement of fixed capital asset (It is firm's intermediate consumption expenditure).

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Illustration 1. Using expenditure method calculate: (*a*) NNP_{MP}, (*b*) NDP_{MP}, (*c*) Net Domestic Income, and (*d*) *NI*.

Items	**₹ (in crores)**
1. Govt. final consumption expenditure	100
2. Indirect tax	120
3. Subsidies	60
4. Fixed capital formation	50
5. *NVA* in stock	40
6. Depreciation	140
7. Private final consumption expenditure	200
8. Exports	90
9. Imports	20
10. *NFIA*	300

Solution.

(*a*) NNP_{MP} = (7) + (1) + (4) + (5) + [(8) − (9)] − (6) + (10)
= 200 + 100 + 50 + 40 + (90 − 20) − 140 + 300
= ₹ 620 crores.

(*b*) NDP_{MP} = NNP_{MP} − *NFIA*
= 620 − 300 = ₹ 320 crores.

(*c*) Net Domestic Income
= NDP_{MP} − Net Indirect Taxes
= 320 − 120 + 60 = ₹ 260 crores.

(*d*) *NI* = Net Domestic Income + *NFIA*
= 260 + 300 = ₹ 560 crores.

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Illustration 2. Calculate GDP_{FC} and GDP_{MP} from the following data:

Items	**₹ (in crores)**
1. Inventory investment	300
2. Depreciation	20
3. Net exports	120
4. NFIA	70
5. Net indirect taxes	50
6. Private final consumption expenditure	100
7. Government purchases of goods and services	200
8. Investment on residential construction by households	110
9. Business fixed investment	70

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Solution.

GDP_{MP} = Private Consumption Expenditure + Government Purchases of Goods and Services + Business Fixed Investment + Investment on Residential Construction by Household + Inventory Investment + Net Exports

= 100 + 200 + 70 + 110 + 300 + 120

= ₹ 900 crores.

GDP_{FC} = GDP_{MP} − Net Indirect Taxes

= 900 − 50 = ₹ 850 crores.

Illustration 3. Calculate NNP_{FC} from the following data:

Items	₹ (in lakhs)
1. Final consumption expenditure	1,000
2. Gross domestic investment	500
3. Government fixed investment	200
4. Closing stock	300
5. Opening stock	100
6. Exports	700
7. Imports	200
8. Depreciation	210
9. *NFIA*	120
10. Net indirect taxes	130

Solution.

GDP_{MP} = Final Consumption Expenditure + Gross Domestic Investment + Change in Stock + Net Exports

= 1,000 + 500 + (300 − 100) + (700 − 200)

= 1,000 + 500 + 200 + 500

= ₹ 2,200 lakhs.

NNP_{FC} = GDP_{MP} − Depreciation + *NFIA* − Net Indirect Taxes

= 2,200 − 210 + 120 − 130

= ₹ 1,980 lakhs.

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2.11.4 The Three Methods Reconciled

It is important to state that value of national income is identical in all the three cases calculated by the income method, the value added method and the expenditure method.

National Income ≡ National Product ≡ National Expenditure

Where ≡ sign denotes identity. That is, national income is always identical with national product and national expenditure.

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The only difference is that with product method, national income is calculated at *creation/ production* level, with income method national income is measured at *distribution* level and with expenditure method, national income is measured at *disposal* level.

Table 2.4 summarises the components of GDP_{MP} estimated through the three methods.

Table 2.4 **Estimation of GDP_{MP} Reconciliation**

Reconciliation of the Three Methods

Product/Value Added Method (Creation)	**Income Method (Distribution)**	**Expenditure Method (Disposal)**
Net indirect taxes	Net indirect taxes	Private final consumption expenditure
+	+	+
Consumption of fixed capital	Consumption of fixed capital	Government final Consumption expenditure
+	+	+
Net value added in the primary sector at factor cost	Compensation of employees	Gross domestic capital formation
+	+	+
Net value added in the secondary sector at factor cost	Operating surplus (Rent, Interest, Profit)	Net export of goods and services
+	+	
Net value added in the tertiary sector at factor cost	Mixed income of self-employed	
$= GDP_{MP}$	$= GDP_{MP}$	$= GDP_{MP}$

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NNP_{FC} or NI can be estimated by the formula:

NNP_{FC} or $NI = GDP_{MP}$ – Depreciation – Net indirect taxes + $NFIA$.

2.11.5 Solved Statement Questions on National Income

Statement 1. How are the following treated in estimating national income from income method? Give reasons. (*i*) Royalty income, (*ii*) Commission on sale of second-hand goods.

Solution.

(*i*) Royalty income is similar to rent and amounts to productive income and, therefore, will be included in the national income.

(*ii*) Commission on sale of second-hand goods is the income of the person for his productive services to various parties and therefore, will be included in the national income.

Statement 2. How are the following treated in estimating national income from expenditure method? Give reasons. (*i*) Purchase of car by a household, (*ii*) Purchase of raw materials by a production unit, (*iii*) Expenditure by government on scholarships to students.

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Solution.

(*i*) Purchase of car by a household is included in the national income because it is private final consumption expenditure which is a part of national income.

(*ii*) Purchase of raw materials by a production unit is not included in the national income because raw material is an intermediate good and intermediate goods and services are excluded from the national income. Purchase of raw materials if included in national income, will result in double counting.

(*iii*) Expenditure by government on scholarships to students is not included in the national income because it is a transfer payment and no productive service is rendered by the students in exchange.

Statement 3. Are the following items included in estimating a country's national income? Give reasons. (*i*) Sale of an old house, (*ii*) Services of owner-occupied house.

Solution.

(*i*) Receipt from sale of an old house is not included in the estimation of national income because receipt from sale of an old house is the receipt by virtue of transfer of an already existing object.

(*ii*) Services of an owner-occupied house amounts to generation of economic services and, therefore, imputed value of rent of such a house will be included in the national income.

Statement 4. Are the following items included in estimating a country's national income? Give reasons. (*i*) Expenditure on purchase of an old house, (*ii*) Brokerage on sale of shares, (*iii*) Meals given to the beggars.

Solution.

(*i*) Expenditure on purchase of an old house will not be included in the national income because it has no relationship with the production of goods and services during the year.

(*ii*) Brokerage on sale of shares is included in the estimation of national income because it is the income of the agent for his services to various parties.

(*iii*) Meals given to the beggars is not included in the national income because it is an expenditure without any productive return. It does not amount to any flow of income and production.

Statement 5. Are the following items included in estimating a country's national income? Give reasons. (*i*) Contribution to provident fund by employer, (*ii*) Production for self-consumption by farmer, (*iii*) Income from smuggling.

Solution.

(*i*) Contribution to provident fund by employer is a part of wages or compensation to employees which is given to the employees for their contribution in the production process. Therefore, it is included in the national income.

(*ii*) Production for self-consumption by farmer is included in the estimation of national income because it results in production of final goods. It results in a flow of income.

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(*iii*) Income from smuggling is not included in the estimation of national income because it is an illegal income and it is without any economic production of goods and services.

Statement 6. Are the following items included in estimating a country's national income? Give reasons. (*i*) Free meals given to workers, (*ii*) Commission received by a lottery ticket seller.

Solution.

(*i*) Free meals given to workers is a part of the wages, *i.e.*, compensation of employees. Since compensation of employees is paid for productive activities in the economy, it is included in the national income.

(*ii*) Commission received by a lottery ticket seller is included in the estimation of national income because it is the income of the lottery ticket seller for his services to various parties.

Statement 7. Are the following items included in estimating a country's national income? Give reasons. (*i*) Free clothes given to workers, (*ii*) Commission paid to dealer in old cars, (*iii*) Growing vegetables in a kitchen garden of the house.

Solution.

(*i*) Free clothes given to workers is a part of wages, *i.e,* compensation of employees. Since compensation of employees is paid for productive services in the economy, it is included in the national income.

(*ii*) Commission paid to dealer in old cars is included in the estimation of national income because it is the income of the dealer for his productive services to various parties.

(*iii*) Growing vegetables in a kitchen garden of the house amounts to production, but not for market. It is not included in the national income.

Statement 8. Are the following items included in estimating a country's national income? Give reasons. (*i*) Expenditure on purchase of shares, (*ii*) Insurance premium paid by employees, (*iii*) Expenditure on advertisement by a firm.

Solution.

(*i*) Expenditure on purchase of shares is payment on account of financial or paper claims and not on account of purchase of goods and services. Therefore, it will not be included in the national income.

(*ii*) According to income method, it is not included in *NY* as it is a payment made by employee.

(*iii*) Expenditure on advertisement by a firm is not included in national income because it is firm's intermediate consumption expenditure.

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Statement 9. Are the following items included in estimating a country's national income? Give reasons. (*i*) Value of wood purchased for manufacturing a table (*ii*) Cash relief to earthquake victims (*iii*) Purchases of goods by foreigners from India.

Solution.

(*i*) Value of wood purchased for manufacturing a table is not included in the value of goods produced in an economy during the year. It is an intermediate good.

(*ii*) Cash relief for earthquake is not included in the national income because it is a transfer payment, *i.e.*, an expenditure without any productive return.

(*iii*) Purchases of goods by foreigners from India is included in the national income because such incomes are net factor income from abroad.

Statement 10. Are the following items included in estimating a country's national income? Give reasons. (*i*) Value of machine purchased by a factory, (*ii*) Contribution to provident fund by employees, (*iii*) Purchases of goods by Indian residents from foreign countries.

Solution.

(*i*) Value of machine purchased by a factory is included in the national income because it is used by the factory for its own use and not for resale in the market.

(*ii*) Contribution to provident fund by employees is not included in national income because it is saving of the employees and does not result in any productive activity.

(*iii*) Purchase of goods by Indian residents from foreign countries are included and deducted from exports. It is included in the national income because it is a part of imports.

Statement 11. Are the following items included in estimating a country's national income? Give reasons. (*i*) Water pump purchased by a farmer, (*ii*) Compensation paid to an accident victim.

Solution.

(*i*) Water pump purchased by a farmer will be included in the national income because it is purchased for his own use. It is part of private household expenditure.

(*ii*) Compensation paid to an accident victim is not included in the national income because it is a transfer payment and does not involve any productive return.

Statement 12. Are the following included in the estimation of national income of a country? Give reasons.

(*i*) Expenditure incurred by a foreign tourist in the country.

(*ii*) Expenditure of the Government on the construction of a new bridge.

(*iii*) Expenditure incurred by a household on feeding of beggars.

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Solution.

(*i*) Expenditure incurred by a foreign tourist in the country is very much a part of the production of goods and services during the year and does not involve any transfer payment. Therefore, it will be included in the national income of the country.

(*ii*) Expenditure of the Government on the construction of a new bridge involves the production of goods and services during the year. Therefore, it will be included in the national income.

(*iii*) Expenditure incurred by a household on feeding of beggars is nothing but a transfer payment. Beggars do not contribute anything by virtue of production of goods and services. Therefore,it will not be included in the national income.

Statement 13. Are the following included in estimation of national income of a country? Give reasons.

(*i*) Receipts from sale of land.

(*ii*) Money received from a worker working abroad, by his family.

(*iii*) Government expenditure on defence.

Solution.

(*i*) Receipts from sale of land is not included in the estimation of national income of a country because receipt from sale of land is the receipt by virtue of transfer of already existing object. It is not a receipt of sale of goods and services produced during the year.

(*ii*) Money received from a worker working abroad by his family is not included in the estimation of national income of India because it is a transfer payment and a transfer payment is not included in the national income.

(*iii*) Government expenditure on defence is included in the estimation of national income of a country because it amounts to investment for the purpose of national income.

Statement 14. Are the following items included in estimation of a country's national income? Give reasons.

(*i*) Receipt of scholarship from government.

(*ii*) Sale of shares.

(*iii*) Construction of a new house.

Solution.

(*i*) Receipt of scholarship from government is not a factor income but a transfer payment and, therefore, it is not included in the national income.

(*ii*) Sale of shares is receipt on account of financial or paper claims and not on account of sale of goods and services. Therefore, it will not be included in the national income.

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(*iii*) Construction of a new house amounts to production of goods and services in an economy, therefore it will be included in the national income.

Statement 15. Are the following items included in estimating a country's national income? Give reasons.

(*i*) Service of housewife.

(*ii*) Sale of new shares of a company.

(*iii*) Winning of a lottery prize.

Solution.

(*i*) Services of housewife are immeasurable and are rendered out of love and affection and not for earning. Therefore, it will not be included in the national income.

(*ii*) Sale of new shares of a company is not related to productive process of the country because shares of a company are paper claims. Therefore, it will not be included in the national income.

(*iii*) Winning of a lottery prize is a windfall gain. It is a transfer of income without any production of goods and services. Therefore, it is not included in the national income.

Statement 16. How are the following treated while estimating national income?

(*i*) Increase in the prices of stocks lying with a trader.

(*ii*) National debt interest.

(*iii*) Profits earned by foreign banks in India.

(*iv*) Rent received by Indian residents on buildings rented out to foreign embassies in India.

Solution.

(*i*) Increase in the prices of stocks lying with a trader is not included in the national income because it does not amount to any flow out of sale and purchase of goods.

(*ii*) National debt interest is not included in national income since it is a reward of savings and does not produce any productive goods and services. It is a transfer payment.

(*iii*) Profits earned by foreign banks in India is a part of NFIA and are, therefore, included in the national income.

(*iv*) Rent received by Indian residents on buildings rented out to foreign embassies in India are the factor incomes. They are included in the national income.

Statement 17. Are the following items included in estimating a country's national income? Give reasons in support of your answer.

(*i*) Free medical facilities to employees.

(*ii*) Gifts received from abroad.

(*iii*) Windfall gains.

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Solution.

(*i*) Free medical facilities to employees are a part of the wages, *i.e.*, compensation of employees. Since compensation of employees is included in the national income, free medical facilities to employees are also included in the national income.

(*ii*) Gifts received from abroad are not factor incomes but are transfer payments which are not included in the estimation of country's national income.

(*iii*) Windfall gains are the chance gains and therefore, not included in the national income but they are included in the personal income.

Statement 18. Are the following included in estimating the national income of a country? Give reasons.

(*i*) Increase in the price of shares of a company.

(*ii*) Profit earned by a branch of an Indian bank in London.

(*iii*) Wages received by the Indian employees working in Pakistan Embassy.

Solution.

(*i*) Increase in the price of shares of a company will not be included in the national income because it does not result in any production of goods and services.

(*ii*) Profit earned by a branch of an Indian bank in London will be included in the national income of India because it is the income of India based enterprise, earned abroad.

(*iii*) Wages received by the Indian employees working in Pakistan Embassy will be included in the national income of India because it is the income of normal residents of India for offering their services.

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Statement 19. How are the following treated in the estimation of national income? Give reasons.

(*i*) Subsidised lunch served to workers in a factory.

(*ii*) Old-age pensions.

(*iii*) Durable use goods purchased by a household.

Solution.

(*i*) Subsidised lunch served to workers in a factory is a part of national income because there is output as well as sale, though at a subsidised price.

(*ii*) Old-age pensions are not a part of national income because they are transfer payments, *i.e.*, unearned incomes.

(*iii*) Durable use goods (except houses) are included in the national income because they are treated as consumed the moment they are purchased.

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Statement 20. Are the following included in the estimation of national income of a country? Give reasons.

(*i*) Government expenditure on street lighting.

(*ii*) Profit earned by Indian companies from their branches abroad.

Solution.

(*i*) Government expenditure on street lighting is not included in the national income because it does not amount to flow of income and production.

(*ii*) Profit earned by Indian companies from their branches abroad are a part of income because such incomes are net factor incomes from abroad.

Statement 21. How are the following treated in the estimation of national income? Give reasons. (*i*) Death duty (*ii*) Purchase of new goods (*iii*) Purchase of vegetables by a restaurant (*iv*) Payment of pocket money to a child.

Solution.

(*i*) Death duty is not included in the estimation of national income since it is a tax, *i.e.*, a transfer payment from household to the government.

(*ii*) Purchase of new goods is included in the estimation of national income because it results in flow of income through productive activities.

(*iii*) Purchase of vegetables by a restaurant is not included in the estimation of national income because it is purchase of intermediate goods.

(*iv*) Payment of pocket money to a child is not included in the estimation of national income because it is not productive.

Statement 22. How are the following treated in estimating national income? Give reasons.

(*i*) School fees paid by students.

(*ii*) House rent allowance paid to the teachers by school.

(*iii*) Examination fees paid by students.

(*iv*) Payment of bonus to school employees.

Solution.

(*i*) It is included in national income as part of the final consumption expenditure of the households.

(*ii*) It is included in national income because it is a part of compensation of employees.

(*iii*) It is included in national income (in the expenditure method) because it is a part of the private consumption expenditure of the households.

(*iv*) It is included in national income because it is compensation of employees, while calculating *NI* by income method.

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Statement 23.Giving reason explain how should the following be treated in estimating national income:

(*i*) Expenditure on fertilizers by a farmer.

(*ii*) Purchase of tractor by a farmer.

Solution.

(*i*) It is intermediate cost for the farmer and deducted from value of output while arriving at national income. Therefore, not included.

(*ii*) It is included because it is capital formation/investment by the farmer.

Statement 24. How should the following be treated in estimating national income of a country? You must give reason for your answer.

(*i*) Taking care of aged parents

(*ii*) Payment of corporate tax

(*iii*) Expenditure on providing police services by the government: (*AI 2014*)

Solution.

(*i*) Included as it is a productive service rendered to the parents.

(*ii*) Not included, as it is a transfer payment and no good or service is produced in return.

(*iii*) Included because it is a governments final consumption expenditure.

Statement 25. Giving reason explain how should the following be treated in estimating gross domestic product at market price? (*AI, Delhi 2014*)

(*i*) Fees to a mechanic paid by a firm.

(*ii*) Interest paid by an individual on a car loan taken from a bank.

(*iii*) Expenditure on purchasing a car for use by a firm.

Solution.

(*i*) Not included, because it is an intermediate cost to the firm.

(*ii*) Not included because the loan is taken to meet consumption expenditure. Interest paid on such a loan is not a factor payment.

(*iii*) Included became it is an investment expenditure.

Statement 26. How should the following be treated while estimating national income? You must give reason in support of your answer.

(*i*) Bonus paid to employees:

(*ii*) Addition to stocks during a year

(*iii*) Purchase of taxi by a taxi driver (*Foreign 2014*)

Solution.

(*i*) Included, as it is part of final expenditure.

(*ii*) Included, as this investment is a final expenditure.

(*iii*) Included, because it is a final expenditure.

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2.12 IMPORTANT FORMULAE AT A GLANCE

Table 2.5 summarises the formulae or different methods of measuring national income.

Table 2.5 **Important Formulae**

1. National Income according to Value Added Method
   - (*a*) NDP_{FC} = Net value added by primary sector at FC + Net value added by secondary sector at FC + Net value added by tertiary sector at FC
   - (*b*) NNP_{FC} = NDP_{FC} + Net factor income from abroad
2. National Income according to Income Method
   - (*a*) NVA_{FC} = Sum total of factor incomes paid out by a production unit
   - (*b*) NDP_{FC} = Compensation of employees (wages and salaries + social security contribution made by employees + private pension) + Operating surplus (Rent + Interest + Profit) + Mixed income
   - (*c*) NNP_{FC} = NDP_{FC} + *NFIA*
3. National Income according to Expenditure Method
   - (*a*) GDP_{MP} = Private final consumption expenditure + Govt. final consumption expenditure + Gross fixed capital formation + Net acquisition of valuables + Change in stock + Net exports
     or
     = Final consumption expenditure + Final investment expenditure
   - (*b*) NNP_{MP} = GDP_{MP} – Depreciation + *NFIA*
   - (*c*) NNP_{FC} = NNP_{MP} – Net indirect taxes

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2.13 SOLVED NUMERICAL PROBLEMS

Illustration 1. From the data given below, calculate National Income:

Items	**₹ (in crores)**
1. Indirect taxes	125
2. Depreciation	100
3. Royalty	10
4. Profits	100
5. Subsidies	20
6. Gross domestic product at market price	900
7. Interest	25
8. Rent	50
9. Net factor income from abroad	(–)20

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Solution.

National Income or NNP_{FC} = (6) + (9) − (2) − (1) + (5)
= 900 + (−)20 − 100 − 125 + 20
= ₹ 675 crores.

Illustration 2. From the following data given below, calculate:

(*a*) Operating Surplus, (*b*) Gross National Product at Market Price.

Items	**₹ (in crores)**
1. Employers' contribution to social security	50
2. Depreciation	30
3. Wages and salaries	350
4. Interest	150
5. Subsidy	30
6. Royalty	20
7. Rent	30
8. Indirect taxes	90
9. Profits	120
10. Net factor income from abroad	(−)10

Solution.

(*a*) Operating Surplus = Rent + Interest + Royalty + Profit
= (7) + (4) + (6) + (9) = 30 + 150 + 20 + 120
= ₹ 320 crores.

NDP_{FC} = (3) + (1) + Operating Surplus
= 350 + 50 + 320
= ₹ 720 crores.

(*b*) GNP_{MP} = NDP_{FC} + (8) − (5) + (10) + (2)
= 720 + 90 − 30 + (−) 10 + 30
= ₹ 800 crores.

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Illustration 3. On the basis of following data, calculate:

(*a*) National Income, (*b*) Compensation of Employees.

Items	**₹ (in crores)**
1. Net factor income from abroad	5
2. Depreciation	60
3. Bonus	40
4. Subsidies	5
5. Wages and salaries	400
6. Net domestic product at market price	700

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7. Indirect taxes	50
8. Contribution to provident fund by employer	20

Solution.

(*a*) NNP_{FC} = (6) + (1) − (7) + (4)
= 700 + 5 − 50 + 5
= ₹ 660 crores.

(*b*) Compensation of Employees = Wages and Salaries + bonus + Contribution to provident fund by employees
= (5) + (3) + (8) = 400 + 40 + 20
= ₹ 460 crores.

Illustration 4. On the basis of following data, calculate National Income:

Items	**₹ (in crores)**
1. Wages and salaries	600
2. Net domestic product at market price	1,000
3. Subsidies	10
4. Contribution to provident fund by employer	30
5. Net factor income from abroad	(−)10
6. Bonus	60
7. Travelling expenses for business purposes	20
8. Indirect taxes	75

Solution.

National Income or NNP_{FC} = (2) + (5) − (8) + (3)
= 1,000 − 10 − 75 + 10 = ₹ 925 crores.

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Illustration 5. Calculate (*a*) Gross Domestic Product at market price and (*b*) Net National Product at factor cost from the following data:

Items	**₹ (in crores)**
1. Consumption of fixed capital	34
2. Employers' contribution to social security schemes	30
3. Rent	10
4. Interest	20
5. Profits	25
6. Royalty	5
7. Wages and salaries	170
8. Net indirect taxes	38
9. Net factor income from abroad	(−)3

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Solution.

(*a*) GDP_{MP} = (7) + (6) + (5) + (4) + (3) + (2) + (1) + (8)
= 170 + 5 + 25 + 20 + 10 + 30 + 34 + 38
= ₹ 332 crores.

(*b*) NNP_{FC} = GDP_{MP} + (9) − (1) − (8)
= 332 + (−)3 − 38 − 34
= ₹ 257 crores.

Illustration 6. Calculate (*a*) Gross National Product at market price and (*b*) Net National Product at factor cost from the following data:

Items	**₹ (in crores)**
1. Net factor income from abroad	(−)5
2. Net exports	(−)7
3. Net indirect taxes	47
4. Net change in stock	13
5. Private final consumption expenditure	263
6. Government final consumption expenditure	50
7. Consumption of fixed capital	45
8. Gross domestic capital formation	100

Solution.

(*a*) GNP_{MP} = (5) + (6) + (8) + (2) + (1)
= 263 + 50 + 100 + (−)7 + (−)5
= ₹ 401 crores.

(*b*) NNP_{FC} = GNP_{MP} − (3) − (7)
= 401 − 47 − 45
= ₹ 309 crores.

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Illustration 7. Find out (*a*) Gross Domestic Product at market price and (*b*) Net National Product at factor cost from the following data:

Items	**₹ (in crores)**
1. Indirect taxes	65
2. Depreciation	45
3. Net factor income from abroad	(−)5
4. Private final consumption expenditure	290
5. Net exports	(−)20
6. Government final consumption expenditure	55
7. Gross domestic capital formation	120

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8. Net change in stock	15
9. Subsidies	20

Solution.

(*a*) GDP_{MP} = (4) + (6) + (7) + (5)
= 290 + 55 + 120 + (−)20
= ₹ 445 crores.

(*b*) NNP_{FC} = GDP_{MP} − (2) + (3) + (9) − (1)
= 445 − 45 + (−)5 + 20 − 65
= ₹ 350 crores.

Illustration 8. Find out Operating Surplus from the following data:

Items	**₹ (in crores)**
1. Net value added at market price	430
2. Wages and salaries	300
3. Subsidies	10
4. Indirect taxes	40

Solution.

Operating Surplus = (1) − (2) + (3) − (4)
= 430 − 300 + 10 − 40
= ₹ 100 crores.

Illustration 9. If domestic factor income is ₹ 1,000 crores and net factor income from abroad is ₹ (−)5 crores, how much will be the national income?

Solution.

National Income = Domestic income + *NFIA*
= 1,000 + (−)5 = ₹ 995 crores.

Illustration 10. Find Operating Surplus from the following data:

Items	**₹ (in crores)**
1. Gross value added at factor cost	100
2. Wages and salaries	30
3. Consumption of fixed capital	10
4. Employers' contribution to social security scheme	3
5. Employees subscription to provident fund	2

Solution.

Operating Surplus = (1) − (2) − (3) − (4)
= 100 − 30 − 10 − 3
= ₹ 57 crores.

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Illustration 11. Calculate Gross Value Added at factor cost from the following data:

Items	**₹ (in crores)**
1. Gross value of output at market price	10,000
2. Depreciation	1,000
3. Indirect taxes	750
4. Economic subsidies	250
5. Intermediate consumption	5,000
6. Compensation of employees	2,000

Solution.

Gross Value Added at Factor Cost = (1) − (3) + (4) − (5)
= 10,000 − 750 + 250 − 5,000
= ₹ 4,500 crores.

Illustration 12. From the following data calculate *NDP* at factor cost:

Items	**₹ (in crores)**
1. Private income	925
2. Income from domestic product accruing to Govt. sector	125
3. Transfer payments	100
4. Net factor income from abroad	(−)200
5. Net indirect taxes	250

Solution.

NDP_{FC} = (1) + (2) − (3) − (4)
= 925 + 125 − 100 − (−)200 = ₹ 1,150 crores.

Illustration 13. From the following data, calculate National Income:

Items	**₹ (in crores)**
1. Compensation of employees	13,300
2. Indirect taxes	3,800
3. Mixed income of self-employed	16,100
4. Operating surplus	5,000
5. Net factor income from abroad	300
6. Consumption of fixed capital	2,200

Solution.

National Income, or NNP_{FC} = (1) + (4) + (3) + (5)
= 13,300 + 5,000 + 16,100 + 300
= ₹ 34,700 crores.

Illustration 14. From the following data calculate *NFIA*:

Items	**₹ (in crores)**
1. *NNP* at *MP*	50,000
2. Indirect taxes	1,000

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3. Subsidies	1,200
4. Operating surplus	5,000
5. Mixed income of self-employed	2,000
6. Compensation of employees	15,000

Solution.

$NFIA = NNP_{FC} - NDP_{FC}$

$= [NNP_{MP} - \text{Net Indirect Taxes}] - NDP_{FC}$

$NFIA = [(1) - (2) + (3)] - [(6) + (5) + (4)]$

$= 50{,}000 - 1{,}000 + 1{,}200 - 15{,}000 - 2{,}000 - 5{,}000$

$=$ ₹ 28,200 crores.

Illustration 15. Calculate GDP_{FC} from the following data:

Items	**₹ (in crores)**
1. Value of intermediate consumption	250
2. Indirect taxes	40
3. Depreciation	50
4. Value of output	700

Solution.

$GDP_{FC} = (4) - (1) - (2)$

$= 700 - 250 - 40 =$ ₹ 410 crores.

Illustration 16. Estimate (*a*) Gross value added or GDP_{MP} by primary, secondary and tertiary sectors, (*b*) National income (NNP_{FC}).

Items	**₹ (in crores)**
1. Value of output of primary sector	800
2. Value of output of secondary sector	200
3. Value of output of tertiary sector	300
4. Value of intermediate inputs purchased by:	
(*a*) Primary sector	400
(*b*) Secondary sector	100
(*c*) Tertiary sector	50
5. Indirect taxes by all sectors	50
6. Consumption of fixed capital of all sectors	80
7. Factor income received from rest of the world	10
8. Factor income paid to non-residents	20
9. Subsidies received by all sectors	20

Solution.

(*a*) Gross Value Added (GVA_{MP}) by Primary Sector $= 800 - 400 =$ ₹ 400 crores.

Gross Value Added (GVA_{MP}) by Secondary Sector $= 200 - 100 =$ ₹ 100 crores.

Gross Value Added (GVA_{MP}) by Tertiary Sector $= 300 - 50 =$ ₹ 250 crores.

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(*b*) NNP_{FC} = GDP_{MP} – Net indirect tax + *NFIA* – Depreciation
= 750 – (50 – 20) + (10 – 20) – 80
= 750 – 30 – 10 – 80 = ₹ 630 crores.

Illustration 17. On the basis of the following information calculate: (*a*) Net value added at factor cost, (*b*) Gross domestic product at market price.

Items	**₹ (in crores)**
1. Operating surplus	2,000
2. Wages and salaries	4,000
3. Mixed income of self-employed	1,000
4. Net indirect tax	150
5. Depreciation	500
6. Rent	500
7. Interest	1,000

Solution.

(*a*) NVA_{FC} = (1) + (2) + (3)
= 2,000 + 4,000 + 1,000 = ₹ 7,000 crores.

(*b*) GDP_{MP} = NVA_{FC} + (5) + (4)
= 7,000 + 500 + 150 = ₹ 7,650 crores.

Illustration 18. On the basis of information given below, calculate *GDP*:

Items	**₹ (in crores)**
1. Personal consumption expenditure	45,000
2. Govt. final consumption expenditure	5,000
3. Gross domestic fixed investment	5,000
4. Increase in inventories	1,000
5. Export of goods and services	6,000
6. Import of goods and services	7,000
7. Net indirect taxes	3,500
8. Depreciation	4,500

Solution.

GDP = (1) + (2) + (3) + (4) + (5) – (6)
= 45,000 + 5,000 + 5,000 + 1,000 + 6,000 – 7,000 = ₹ 55,000 crores.

Illustration 19. From the national accounts for the year 1990 at current prices we have the following information. Compute the value of (*a*) *NNP* at MP (*b*) *GNP* at MP (*c*) *GNP* at FC (*d*) *NDP* at FC.

Items	**₹ (in crores)**
1. *NDP* at market price	80,000
2. Net factor income from abroad	(–)200
3. Depreciation	4,950

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4. Subsidies	1,770
5. Indirect taxes	10,600

Solution.

(*a*) NNP_{MP} = (1) + (2)
= 80,000 + (−)200 = ₹ 79,800 crores.

(*b*) GNP_{MP} = NNP_{MP} + (3)
= 79,800 + 4,950 = ₹ 84,750 crores.

(*c*) GNP_{FC} = GNP_{MP} − (5) + (4)
= 84,750 − 10,600 + 1,770 = ₹ 75,920 crores.

(*d*) NDP_{FC} = (1) + (4) − (5)
= 80,000 + 1,770 − 10,600 = ₹ 71,170 crores.

Illustration 20. The figures given below pertain to 1994–95. Compute (*a*) Depreciation, (*b*) Net factor income from abroad, (*c*) Subsidies, (*d*) *NDP* at factor cost.

Items	**₹ (in crores)**
1. *GNP* at factor cost	95,000
2. Indirect taxes	14,000
3. *NDP* at market price	1,00,422
4. *NNP* at market price	1,00,000
5. *GNP* at market price	1,07,000

Solution.

(*a*) Depreciation = (5) − (4)
= 1,07,000 − 1,00,000 = ₹ 7,000 crores.

(*b*) *NFIA* = (4) − (3)
= 1,00,000 − 1,00,422 = ₹ (−)422 crores.

(*c*) Net Indirect Taxes = (5) − (1)
= 1,07,000−95,000 = ₹ 12,000 crores.

Subsidies = (2) − Net indirect taxes
= 14,000 − 12,000 = ₹ 2,000 crores.

(*d*) NDP_{FC} = (3) − Net indirect taxes
= 1,00,422 − 12,000 = ₹ 88,422 crores.

Illustration 21. From the given information, estimate GNP_{MP}:

Items	**₹ (in crores)**
1. *GDP* at FC	370
2. Net indirect taxes	60
3. *NFIA*	(−)30

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Solution.

GNP_{MP} = (1) + (3) + (2)
= 370 + 60 + (−)30
= ₹ 400 crores.

Illustration 22. From the following data, calculate Net Indirect Taxes and NDP_{FC}:

Items	**₹ (in crores)**
1. GDP_{MP}	600
2. Operating surplus	50
3. Consumption of fixed capital	100
4. Wages and salaries	300

Solution.

Net Indirect Taxes = $NDP_{MP} - NDP_{FC}$ [(1) − (3)] − NDP_{FC}
= 600 − 100 − 350 = ₹ 150 crores.

NDP_{FC} = (2) + (4)
= 50 + 300
= ₹ 350 crores.

Illustration 23. In a hypothetical economy, only the following transactions take place. Firm *A* sells all of its product worth ₹ 4,000 crores to firm *B*. Firm *B* sells its entire output for ₹ 8,000 crores to firm *C*. Firm *C* sells his goods for final demand at ₹ 14,000 crores, (*a*) Calculate value added by each firm. (*b*) An Indirect tax of 20% is levied on *A*'s product. The burden of this tax is shifted on to the consumers. Determine the market price of the goods. (*c*) A subsidy of ₹ 50 crores is given to *B*. As a result it reduced the price of its output. Determine the market price of the output of the three firms again.

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Solution.

(*a*) Value added by the firm *A* = ₹ 4,000 crores
Value added by the firm *B* = 8,000 − 4,000 = ₹ 4,000 crores
Value added by the firm *C* = 14,000 − 8,000 = ₹ 6,000 crores.

(*b*) Firm	Value of output ₹ (in crores)	Indirect taxes	Market price ₹ (in crores)
A	4,000	20/100 × 4,000 = 800	4,800 (*i.e.*, 4,000 + 800)
B	8,000	nil	8,800 (*i.e.*, 8,000 + 800)
C	14,000	nil	14,800 (*i.e.*, 14,000 + 800)

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(*c*) Firm	Value of output	Subsidies	Market price
	₹ (in crores)		₹ (in crores)
A	4,000	nil	4,000 (no change)
B	8,000	50	7,950 (*i.e.*, 8,000 − 50)
C	14,000	nil	13,950 (*i.e.*, 14,000 − 50)

Illustration 24. Calculate the values of GNP_{MP} and GNP_{FC}.

Items	**₹ (in crores)**
1. Amount of the tea produced	2,000
2. Market price of tea per kg.	100
3. Amount of coffee produced	1,500
4. Market price of coffee per kg.	300
5. Value of other agricultural products	6,00,000
6. Value of industrial products	8,00,000
7. Value of intermediate inputs	3,00,000
8. Net indirect taxes	1,00,000

Solution.

GNP_{MP} = (Price × Quantity of tea) + (Price × Quantity of coffee) + 5 + 6 − 7

= (100 × 2,000) + (300 × 1,500) + 6,00,000 + 8,00,000 − 3,00,000

= 2,00,000 + 4,50,000 + 11,00,000

= ₹ 17,50,000 crores.

GNP_{FC} = GNP_{MP} − Net indirect taxes

= 17,50,000 − 1,00,000

= ₹ 16,50,000 crores.

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Illustration 25. Calculate gross value added at factor cost from the following:

Items	**₹ (in crores)**
1. Gross value of output at market price	10,000
2. Depreciaton	1,000
3. Indirect taxes	750
4. Subsidies	250
5. Intermediate consumption	5,000
6. Compensation of employees	2,000

Solution.

GVA_{MP} = (1) − (5)

= 10,000 − 5,000 = ₹ 5,000 crores.

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$GVA_{FC} = GVA_{MP} - (3 - 4)$
$= 5,000 - (750 - 250)$
$= 5,000 - 500 = ₹ 4500$ crores.

Illustration 26. From the following given data determine the values of (*a*) GDP_{MP} (*b*) GNP_{FC} (*c*) NNP_{MP} (*d*) NNP_{FC}.

Items	**₹ (in crores)**
1. Value of output	1,00,000
2. Depreciaton	6,000
3. Indirect taxes	6,000
4. Subsidies	1,000
5. Intermediate consumption	24,000

Solution.

(*a*) GDP_{MP} = (1) − (5) = ₹ 76,000 crores. This is equal to GNP_{MP} as net factor income from abroad is zero.

(*b*) $GNP_{FC} = GNP_{MP} - (3 - 4) = 76,000 - (6,000 - 1,000)$
$= ₹ 71,000$ crores.

(*c*) $NNP_{MP} = GNP_{MP} - (2) = 76,000 - 6,000 = ₹ 70,000$ crores

(*d*) $NNP_{FC} = NNP_{MP} - (3 - 4) = 70,000 - (6,000 - 1,000)$
$= ₹ 65,000$ crores.

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Illustration 27. From the data given below find out the Net Value Added at factor cost:

Items	**₹ (in crores)**
1. Total sales	500
2. Cost of intermediate inputs	200
3. Indirect taxes	175
4. Subsidies	25
5. Depreciation	50

Solution.

Net value added at FC = (1) − (2) − (3) + (4) − (5)
= 500 − 200 − 175 + 25 − 50
= ₹ 100 crores.

Illustration 28. Calculate (*i*) National Income with the help of Income Method, (*ii*) *GDP* at Factor Cost from the data using Expenditure Method.

Items	**₹ (in crores)**
1. Private final consumption expend.	85
2. Net domestic fixed capital formation	25

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3. Consumption of fixed capital	2
4. Closing stock	10
5. Opening stock	5
6. Govt. final consumption expend.	10
7. Net exports	(–) 5
8. Wages and salaries	80
9. Contribution of employers towards social security scheme	10
10. Operating surplus	20
11. Net factor income from ROW	(–)5
12. Net indirect taxes	10

Solution.

(*a*) *NI* by Income Method = (8) + (9) + (10) + (11)
= 80 + 10 + 20 +(–5) = ₹ 105 crores.

(*b*) GDP_{FC} by Expenditure method = (1) + (2) + (4) – (5) + (6) + (7) – (12) + (3)
= 85 + 25 + 10 – 5 + 10 + (–5) – 10 + 2
= ₹ 112 crores.

Illustration 29. From the data given below calculate (*i*) Gross Domestic Product at Market Price by Income Method, (*ii*) *NI* by Expenditure Method.

Items	**₹ (in crores)**
1. Compensation of employees	13,000
2. Indirect taxes	3,700
3. Gross fixed capital formation	6,300
4. Interest, rent and profit	5,000
5. Govt. final consumption expenditure	3,400
6. Mixed income of self-employed	16,000
7. Change in stock	1,000
8. Imports	1,800
9. Exports	1,700
10. Private final consumption expenditure	29,000
11. Subsidies	300
12. Net factor income from abroad	250
13. Consumption of fixed capital	2,200

Solution.

(*i*) GDP_{MP} by Income Method = (1) + (6) + (13) + (2) – (11) + (4)
= 13,000 + 16,000 + 2,200 + 3,700 – 300 + 5,000
= ₹ 39,600 crores.

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(*ii*) National Income by Expenditure Method = (10) + (5) + (3) + (7) + (9) − (8) − (13) + (12) − (2) + (11)
= 29,000 + 3,400 + 6,300 + 1,000 + 1,700 − 1,800 − 2200 + 250 − 3700 + 300
= ₹ 34,250 crores.

Illustration 30. Calculate National Income on the basis of the following data:

Items	**₹ (in crores)**
1. Private final consp. expend. in domestic market	750
2. Govt. final consp. expend.	100
3. Consp. of fixed capital	25
4. Net exports	(–)25
5. Net factor income from abroad	(–)20
6. Gross fixed capital formation	300
7. Change in stock	50
8. Direct purchases abroad by resident households	50
9. Direct purchases by non-residents in the domestic market	5
10. Net indirect taxes	100

Solution.

NNP_{FC} = (1) + (2) + (6) + (7) + (4) − (3) + (5) − (10)
= 750 + 100 + 300 + 50 + (–)25 − 25 + (–)20 − 100
= ₹ 1,030 crores.

Illustration 31. Calculate Gross Domestic Product at Market Price from the data:

Items	**₹ (in crores)**
1. Net value added at market price by	
(*a*) Primary sector	700
(*b*) Secondary sector	1,000
(*c*) Tertiary sector	1,000
2. Net exports	(–)10
3. Net indirect taxes	100
4. Value of intermediate consumption in	
(*a*) Primary sector	100
(*b*) Secondary sector	300
(*c*) Tertiary sector	300
5. Consumption of fixed capital in	
(*a*) Primary sector	20
(*b*) Secondary sector	50
(*c*) Tertiary sector	30

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Solution.

GDP_{MP} = [Net value added by three sectors] + [consumption of fixed capital in three sectors]

= 700 + 1,000 + 1,000 + (20 + 50 + 30) = ₹ 2,800 crores.

Illustration 32. Calculate (*i*) *GDP* at *MP* by Income Method and (*ii*) *NNP* at *FC* by Expenditure Method.

Items	**₹ (in crores)**
1. Govt. final consp. expend.	100
2. Gross fixed capital formation	310
3. Operating surplus	800
4. Change in stock	50
5. Exports	40
6. Net factor income from abroad	(–)10
7. Subsidies	20
8. Consumption of fixed capital	20
9. Imports	50
10. Compensation of employees	300
11. Mixed income of self-employed	30
12. Indirect taxes	120
13. Pvt. final consp. expend.	800

Solution.

(*i*) GDP_{MP} by Income Method = (10) + (11) + (3) + (8) + (12) − (7)

= 300 + 30 + 800 + 20 + 120 − 20

= ₹ 1,250 crores.

(*ii*) NNP_{FC} by Expenditure Method = (13) + (1) + (2) + (4) + (5) − (9) − (8) + (6) − (12) + (7)

= 800 + 100 + 310 + 50 + 40 − 50 − 20 + (−)10 −120 + 20

= ₹ 1,120 crores.

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Illustration 33. *A* sells his goods to *B* for ₹ 800 and for private final consumption for ₹400. *B* sells his goods for ₹.1000 to *C*. *C* sells his goods to private final consumption for ₹ 1,150. Find out Gross Value Added at Market Price.

Solution.

GVA_{MP} = (800 + 400) + (1,000 − 800) + (1,150 − 1,000) = ₹ 1,550.

Illustration 34. Calculate GDP_{MP} and GNP_{MP} by income method.

Items	**₹ (in crores)**
1. Compensation of employees	13,363
2. Govt. final consumption expenditure	3,801

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3. Indirect taxes	3,864
4. Gross fixed capital formation	6,305
5. Mixed income of self-employed	16,112
6. Interest, rent and profit	5,044
7. Subsidies	337
8. Net factor income from abroad	(–)284
9. Consumption of fixed capital	2,217

Solution.

(*i*) GDP_{MP} = (1) + (5) + (6) + (9) + (3) − (7)
= 13,363 + 16,112 + 5,044 + 2,217 + 3,864 − 337
= ₹ 40,263 crores.

(*ii*) GNP_{MP} = GNP_{MP} + (8) = 40,263 + (−)284 = ₹ 39,979 crores.

Illustration 35. Calculate GDP_{FC} and National Income by Income Method.

Items	**₹ (in crores)**
1. Govt. final consp. expend.	7,351
2. Net indirect taxes	7,714
3. Gross fixed capital formation	13,248
4. Mixed income of the self-employed	28,267
5. Rent, interest, profits	9,637
6. Consumption of fixed capital	4,046
7. *NFIA*	(–)255
8. Compensation of employees	24,420

Solution.

(*i*) National Income = (8) + (5) + (4) + (7)
= 24,420 + 9,637 + 28,267 + (–)255
= ₹ 62,069 crores.

(*ii*) GDP_{FC} = *NI* + (6) − (7)
= 62,069 + 4,046 + 255
= ₹66,370 crores.

Illustration 36. Calculate GDP_{MP} GDP_{FC} and GNP_{FC} by Expenditure Method.

Items	**₹ (in crores)**
1. Compensation of employees	24,420
2. Govt. final consp. expend.	7,351
3. Private final consp. expend.	51,177
4. Exports	4,812

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5. Imports	5,664
6. Gross fixed capital formation	13,248
7. Change in stock	3,170
8. *NFIA*	(–)255
9. Consp. of fixed capital	4,046
10. Indirect taxes	8,834
11. Subsidies	1,120

Solution.

(*i*) GDP_{MP} = (3) + (2) + (6) + (7) + (4) − (5)
= 51,177 + 7,351 + 13,248 + 3,170 + 4,812 − 5,664
= ₹ 74,094 crores.

(*ii*) GDP_{FC} = GDP_{MP} + (10) + (11)
= 74,094 − 8,834 + 1,120
= ₹ 66,380 crores.

(*iii*) GNP_{FC} = GDP_{FC} + (8) = 66,380 + (−)255
= ₹ 66,125 crores.

Illustration 37. Calculate the Total Value of Production both at Current and Constant Prices.

	1970–71		1980–81		1984–85	
Commodity	Prod.	Price	Prod.	Price	Prod.	Price
Tea	10 kg	₹ 50	15 kg	₹ 50	15 kg	₹ 70
Coffee	20 kg	₹ 40	25 kg	₹ 40	25 kg	₹ 80

Base Year = 1970–71

Solution.

	Production at Current Price	Production at Constant Price (1970–71)
1970–71	(10 × 50) + (20 × 40) = 1, 300	1, 300
1980–81	(15 × 50) + (25 × 40) = 1, 750	1, 750
1984–85	(15 × 70) + (25 × 80) = 3, 050	1, 750

Illustration 38. Find the Value of Output and *GVA* at MP from the following data.

Items	**₹ (in crores)**
1. Purchase of intermediate inputs	200
2. Consp. of fixed capital	50
3. Indirect taxes	75
4. Subsidies	25
5. Wages and salaries	400
6. Rent	60
7. Interest	40

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8. Profits	100
9. Sales	800
10. Change in stock	100

Solution.

(*i*) Value of Output = Sales + Change in stock = 800 + 100
= ₹ 900 crores.

(*ii*) GVA_{MP} = Value of output − (1) = 900 − 200
= ₹ 700 crores.

Illustration 39. Given the following transactions, calculate the National Product. Firm *X* sells goods worth ₹ 600 to Firm *Y* and goods worth ₹ 400 to firm *Z*. Firm *Y* sells finished goods worth ₹ 250 for final consumption and goods of ₹ 500 to firm *Z*. Firm *Z* sells its product for ₹ 2,800 to households.

Solution.

National Product = Value added = (Value added by *X*) + (Value added by *Y*)
+ (Value added by *Z*)
= (600 + 400) + (250 + 500 − 600) + [2,800 − (400 + 500)]
= 1,000 + 150 + 1,900
= ₹ 3,050.

Illustration 40. Industry *A* sells its entire output of ₹ 500 crores to Industry *B*. *B* adds a value of ₹ 100 crores to it and sells half of its output to industry *C* and the rest of it to private consumers. *C* adds the same value as *B* to its intermediate inputs and sells it for final consumption. Determine Gross Value Added by each industry.

Solution.

Gross Value Added = (500) + (600 − 500) + (400 − 300)
= 500 + 100 + 100
= ₹ 700 crores.

Illustration 41. For the given economy, calculate (*i*) *GNP* at MP, (*ii*) *NNP* at MP, (*iii*) *GDP* at MP, (*iv*) *NDP* at MP, (*v*) *GNP* at FC, (*vi*) *NNP* at FC, (*vii*) *GDP* at FC, (*viii*) *NDP* at FC. Industry *A* imports goods for ₹ 200 and sells to *B* for ₹ 500, and to *C* for ₹ 300 and for final consumption goods worth ₹ 1,200. Industry *B* sells goods for ₹ 300 to *C* and for ₹ 2,000 to households. *C* sells goods for ₹ 3,000 to consumers and export goods worth ₹ 1,000. Depreciation amounts to ₹ 50 and indirect taxes add upto ₹ 75, Subsidies are worth ₹ 75.

Solution.

(*i*) GNP_{MP} = Value added = (500 + 1,200 + 300 − 200) + (300 + 2,000 − 500)
+ (3,000 + 1,000 − (300 + 300))
= 1,800 + 1,800 + 3,400 = ₹ 7,000

(*ii*) NNP_{MP} = GNP_{MP} − Depreciation = 7,000 − 50 = ₹ 6,950.

(*iii*) GDP_{MP} = GNP_{MP} − *NFIA* = 7,000 − 0 = ₹ 7,000.

(*iv*) NDP_{MP} = NNP_{MP} − *NFIA* = 6,950 − 0 = ₹ 6,950

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(*v*) GNP_{FC} = NDP_{MP} + Depreciation + Net indirect taxes + *NFIA*
= 6,950 + 50 + 0 + 0 = ₹ 7,000.

(*vi*) NNP_{FC} = GNP_{FC} − Depreciation = 7,000 − 50 = ₹ 6,950.

(*vii*) GDP_{FC} = GNP_{FC} − *NFIA* = 7,000 − 0 = ₹ 7,000.

(*viii*) NDP_{FC} = GDP_{FC} − Depreciation = 7,000 − 50 = ₹ 6,950.

Illustration 42. There exists four industries in an economy such that the value of output of each is the same. Intermediate consumption expenditure of the four industries are ₹ 500, 1,000, 2,000 , 2,500 in crores. If the total value of output in the economy is ₹ 30,000 crores, calculate the Value Added by each industry and the National Product.

Solution.

GVA = National Product = Value of output − Intermediate consumption
= 30,000 − (500 + 1,000 + 2,000 + 2,500)
= 30, 000 − 6,000 = ₹ 24,000 crores.

Illustration 43. Firm *A* sells its output to firm *B* for ₹ 500 crores. Firm *B* sells its product to firm *C* for ₹ 800 crores. Firm *C* sells all of its output to private consumption for ₹ 1,200 crores. (*i*) What is the value of National Product and the value added by each industry? (*ii*) If *A's* imports amount to ₹ 50 crores, what will be the value of National Product? (*iii*) If firm *A* imports goods for ₹ 100 crores and firm *C* exports goods for ₹ 200 crores, find the value of National Product.

Solution.

(*i*)National Product = Total value added
= 500 + (800 − 500) + (1,200 − 800)
= 500 + 300 + 400 = ₹ 1,200 crores.

(*ii*) National Product = 1,200 − 50 = ₹ 1,150 crores.

(*iii*) National Product = 1,200 − 100 + 200
= ₹ 1,300 crores.

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Illustration 44. Find out (*i*) *NDP* at Factor Cost by Expenditure Method and (*ii*) *GDP* at Market Price by Income Method from the data given below:

Items	**₹ (in crores)**
1. Gross fixed capital formation	130
2. Private final consumption expenditure	510
3. Mixed income of the self-employed	280
4. Net factor income from rest of the world	(−)5
5. Exports	50
6. Imports	60
7. Compensation of employees	240
8. Govt. final consumption expenditure	70
9. Consumption of fixed capital	40

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10. Indirect taxes	90
11. Subsidies	10
12. Rent, interest and profits	90
13. Change in stock	30
14. Interest on national debt	10

Solution.

$$(i)\ NDP_{FC} = (2) + (8) + (1 + 13) + (5 - 6) - (9) - [(10) - (11)]$$
$$= 510 + 70 + (130 + 30) + (50 - 60) - 40 - (90 - 10)$$
$$= 580 + 160 - 10 - 40 - 80$$
$$= ₹\ 610 \text{ crores.}$$

$$(ii)\ GDP_{MP} = (3) + (7) + (12) + (9) + (10) - (11)$$
$$= 280 + 240 + 90 + 40 + 90 - 10$$
$$= ₹\ 730 \text{ crores.}$$

Illustration 45. Calculate *GNP* at MP:

Items	**₹ (in crores)**
1. Interest	25
2. Net factor income from abroad	(–)5
3. Net indirect taxes	40
4. Royalty	5
5. Wages and salaries	240
6. Depreciation	50
7. Profits	30
8. Rent	10

Solution.

$$GNP_{MP} = (1) + (4) + (5) + (7) + (8) + (6) + (2) + (3)$$
$$= 25 + 5 + 240 + 30 + 10 + 50 + (-5) + 40$$
$$= ₹\ 395 \text{ crores.}$$

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Illustration 46. Calculate National Income by Income Method from the given data:

Items	**₹ (in crores)**
1. Compensation of employees	13,300
2. Wages in kind	200
3. Indirect taxes	3,800
4. Gross domestic fixed capital formation	6,200
5. Operating surplus	5,000
6. Mixed income of self-employed	16,100
7. Net factor income from abroad	300
8. Net exports	(–)100

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Solution.

National Income = (1) + (5) + (6) + (7)
= 13,300 + 5,000 + 16,100 + 300
= ₹ 34,700 crores.

Note. *COE* includes wages in kind.

Illustration 47. Calculate GDP_{MP} from the given data:

Items	**₹ (in crores)**
1. Gross domestic fixed investment	150
2. Increase in inventories	25
3. Govt. final consumption expend.	125
4. Export of goods and services	85
5. Import of goods and services	105
6. Personal disposable income (Consumer savings are nil)	2,150

Solution.

GDP_{MP} = (1) + (2) + (3) + (4 − 5) + (6)
= 150 + 25 + 125 + (85 − 105) + 2,150
= ₹ 2,430 crores.

Illustration 48. Calculate GDP_{MP} from the given data:

Items	**₹ (in crores)**
1. Personal consumption expenditure	45,000
2. Govt. final consp. expend.	5,000
3. Gross domestic fixed investment	5,000
4. Increase in inventories	1,000
5. Export of goods and services	6,000
6. Import of goods and services	7,000
7. Net indirect taxes	3,500
8. Depreciation	4,500

Solution.

GDP_{MP} = (1) + (2) + (3) + (4) + (5) − (6)
= 45,000 + 5,000 + 5,000 + 1,000 + 6,000 − 7,000
= ₹ 55,000 crores.

Illustration 49. Calculate *GDP* at Market Price by the (*i*) Income and (*ii*) Expenditure Methods from the following data:

Items	**₹ (in crores)**
1. Compensation of employees	13,363
2. Govt. final consp. expend.	3,801

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3. Indirect taxes	3,864
4. Gross fixed capital formation	6,305
5. Mixed income of self-employed	16,112
6. Interest, rent and profit	5,044
7. Change in stock	1,039
8. Export of goods and services	1,771
9. Import of goods and services	1,816
10. Private final consumption expenditure	29,163
11. Net factor income from abroad	(–)284
12. Subsidies	337
13. Consumption of fixed capital	2,217

Solution.

(*i*) GDP_{MP} by income method = (1) + (5) + (6) + (13) + (3) − (12)
= 13,363 + 16,112 + 5,044 + 2,217 + 3,864 − 337
= ₹ 40,263 crores.

(*ii*) GDP_{MP} by expenditure method = (10) + (2) + (4) + (7) + (8) − (9)
= 29,163 + 3,801 + 6,305 + 1,039 + 1,771 − 1,816
= ₹ 40,263 crores.

Illustration 50. From the data given below calculate National Income by (*i*) Income Method, (*ii*) Expenditure Method and (*iii*) GNP_{FC}.

Items	**₹ (in crores)**
1. Govt. final consp. expend.	7,341
2. Indirect taxes	8,834
3. Gross fixed capital formation	13,248
4. Mixed income of self-employed	29,267
5. Subsidies	1,120
6. Change in stock	3,170
7. Rent, interest and profit	9,637
8. Consp. of fixed capital	4,046
9. Private final consumption expend.	51,177
10. Exports of goods and services	4,812
11. Net factor income earned from abroad	(–)255
12. Compensation of employees	23,420
13. Import of goods and services	5,664

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Solution.

(*i*) NNP_{FC} by Income Method = (7) + (12) + (4) + (11)
= 9,637 + 23,420 + 29,267 + (−)255
= ₹ 62,069 crores.

(*ii*) NNP_{FC} by Expenditure Method = (9) + (1) + (3) + (6) + (10) − (13) − (8) + (11) − (2) + (5)
= 51,177 + 7,341 + 13,248 + 3,170 + 4,812 − 5,664 − 4,046 + (−)255 − 8,834 + 1,120
= ₹ 62,069 crores.

(*iii*) GNP_{FC} = NNP_{FC} + Depreciation
= 62,069 + 4,046
= ₹ 66,115 crores.

Illustration 51. Calculate *GNP* at MP by the Income and Expenditure Method:

Items	**₹ (in crores)**
1. Domestic consumption	6,000
2. Profit	1,800
3. Depreciation	80
4. Net foreign investment	400
5. Wages	4,500
6. Gross domestic investment	1,680
7. Interest	900
8. Rent	800

Solution.

(*i*) *NI* by Income Method = Wages + Rent + Interest + Profit
= 4,500 + 800 + 900 + 1,800
= ₹ 8,000 crores.

∴ GNP_{MP} by Income Method = NNP_{FC} + *NIT* + Depreciation
= 8,000 + 0 + 80 = ₹ 8,080 crores.

(*ii*) GNP_{MP} by Expenditure Method = Domestic consumption + Gross domestic investment + Net foreign investment
= 6,000 + 1,680 + 400 = ₹ 8,080 crores.

National Income = GNP_{MP} − Depreciation − *NIT*
= 8,080 − 80 − 0 = ₹ 8,000 crores.

Illustration 52. With the help of the information given below estimate *GNP* at MP:

Items	**₹ (in crores)**
1. Pvt. final consumption expend.	50,000
2. Govt. final consumption expend.	15,000
3. Gross fixed capital formation	10,000

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4. Increase in stock	2,000
5. Export of goods and services	5,000
6. Import of goods and services	7,000
7. Capital consumption allowance	6,500
8. Net indirect taxes	5,000
9. Net factor income from abroad	(–)3,000

Solution.

$$GNP_{MP} = (1) + (2) + (3) + (4) + (5) - (6) + (9)$$
$$= 50,000 + 5,000 + 10,000 + 2,000 + 5,000 - 7,000 + (-)3,000$$
$$= ₹\ 72,000 \text{ crores.}$$

Illustration 53. *NDP* at market price is ₹ 2,400 crores, the capital stock of the country is worth ₹ 400 crores and depreciation is 10% per annum. Indirect taxes amount to ₹ 120 crores and subsidies equal to ₹ 20 crores. Factor income from the rest of the world is ₹ 400 crores and to the rest of the world is ₹ 600 crores. Calculate Gross National Product at Factor Cost.

Solution.

$$NDP_{MP} = ₹\ 2,400 \text{ crores}$$
$$GNP_{FC} = NDP_{MP} + \text{Depreciation} - \text{Net indirect taxes} + NFIA$$
$$= (2,400) + \frac{10}{100} \times 400 - (120 - 20) + (400 - 600)$$
$$= 2,400 + 40 - 100 - 200 = ₹\ 2,140 \text{ crores.}$$

Illustration 54. From the information given below calculate (*i*) *GDP* at FC and (*ii*) National Income:

Items	**₹ (in crores)**
1. Depreciation	1,000
2. Govt. final consp. expend.	3,650
3. Exports	1,500
4. Imports	2,000
5. Indirect taxes	500
6. Households final consp. expend.	4,980
7. Change in stock	365
8. Gross fixed capital formation	1,235
9. Economic subsidies	800
10. Net factor income earned from abroad	200

Solution.

$$(i)\ GNP_{FC} = (6) + (2) + (8) + (7) + (3) - (4) - (5) + (9)$$
$$= 4,980 + 3,650 + 1,235 + 365 + 1,500 - 2,000 - 500 + 800$$
$$= ₹\ 10,030 \text{ crores.}$$

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(*ii*) NI or NNP_{FC} = GDP_{FC} − (1) + (10)
= 10,030 − 1,000 + 200
= ₹ 9,230 crores.

Illustration 55. From the following data, estimate the Value Added:

Items	**₹ (in crores)**
1. Value of services supplied	3,120
2. Cost of raw material and inputs	5,370
3. Value of sale of services	2,250

Solution.

Value Added = (1) + (3) − (2)
= 3,120 + 2,250 − 5,370 = 0.

Illustration 56. Calculate National Income by Income and Expenditure Method from the following data:

Items	**₹ (in crores)**
1. Govt. final consumption expenditure	50
2. Operating surplus	300
3. Opening stock	20
4. Private final consumption expenditure	500
5. Gross fixed capital formation	90
6. Closing stock	35
7. Net exports	(−)5
8. Net indirect taxes	60
9. Compensation of employees	220
10. Consumption of fixed capital	20
11. Mixed income of self-employed	50
12. Net factor income from abroad	20

Solution.

(*i*) By Income Method

NI = (9) + (2) + (11) + (12)
= 220 + 300 + 50 + 20
= ₹ 590 crores.

(*ii*) By Expenditure Method

NNP_{FC} = (4) + (1) + (5) + (6) − (3) + (7) − (10) + (12) − (8)
= 500 + 50 + 90 + 35 − 20 + (−5) − 20 + 20 − 60
= ₹ 590 crores.

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Illustration 57. Find Net Domestic Product at Market Price from the following data:

Items	**₹ (in crores)**
1. Consumption of fixed capital	50
2. Net indirect taxes	30
3. Value of output	750
4. Value of intermediate consp.	300

Solution.

NDP_{MP} = (3) − (4) − (1)
= 750 − 300 − 50 = ₹ 400 crores.

Illustration 58. From the following data calculate Gross National Product at Factor Cost:

Items	**₹ (in crores)**
1. Gross fixed capital formation	100
2. Change in stock	20
3. Net capital formation	110
4. Mixed income of self-employed	200
5. Net factor income from abroad	(−)10
6. Net exports	(−)20
7. Compensation of employees	250
8. Operating surplus	400
9. Net indirect taxes	50

Solution.

GNP_{FC} = (7) + (8) + (4) + [(1) + (2) − (3)] + (5)
= 250 + 400 + 200 + [100 + 20 − 110]+(−)10
= ₹ 850 crores.

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Illustration 59. Calculate Net Value Added at Market Price from the following data:

Items	**₹ (in crores)**
1. Subsidies	1
2. Sales	100
3. Closing stock	10
4. Indirect taxes	5
5. Intermediate consumption	30
6. Opening stock	20
7. Consumption of fixed capital	15

Solution.

Net Value Added at MP = (2) + (3) − (5) − (6) − (7)
= 100 + 10 − 30 − 20 − 15
= ₹ 45 crores.

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Illustration 60. Calculate (*i*) *GNP* at MP by Expenditure Method and (*ii*) *GDP* at MP by Income Method:

Items	**₹ (in crores)**
1. Private final consumption expenditure	200
2. Government final consumption expenditure	20
3. Gross domestic capital formation	40
4. Net exports	(–) 5
5. Wages and salaries	165
6. Employer's contribution to social security schemes	10
7. Profits	15
8. Interest	20
9. Subsidies	5
10. Indirect taxes	30
11. *NFIA*	5
12. Consumption of fixed capital	5
13. Rent	15

Solution.

(*i*) GNP_{MP} by Expenditure Method

GDP_{MP} = (1) + (2) + (3) + (4)

= 200 + 20 + 40 + (–) 5 = ₹ 255 crores.

GNP_{MP} = GDP_{MP} + (11)

= 255 + 5 = ₹ 260 crores.

(*ii*) GDP_{MP} by Income Method

NDP_{FC} = (5) + (6) + (7) + (8) + (13)

= 165 + 10 + 15 + 20 + 15 = ₹ 225 crores.

GDP_{FC} = NDP_{FC} + Depreciation

= 225 + 5 = ₹ 230 crores.

∴ GDP_{MP} = GDP_{FC} + *NIT*

= 230 + [(10) − (9)]

= 230 + 30 − 5 = ₹ 255 crores.

Illustration 61. Find out Net Value Added at Factor Cost by an enterprise on the basis of following data:

Items	**₹ (in crores)**
1. Consumption of raw materials	150
2. Value of output	600
3. Excise duty	60
4. Sales tax	60
5. Depreciation	30

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Solution.

Gross Value Added at MP = (2) − (1)
= 600 −150 = ₹ 450 crores
Net Value Added at FC = GVA_{MP} − (5) − [(4) + (3)]
= 450 − 30 − [60 + 60]
∴ = 420 − 120 = ₹ 300 crores.

Illustration 62. From the given data for a firm find out Net Value Added at Factor Cost:

Items	**₹ (in crores)**
1. Total sales	75,000
2. Purchase of raw materials and other inputs	30,000
3. Indirect taxes	7,500
4. Consumption of fixed capital	2,500

Solution.

Net Value Added at FC = (1) − (2) − (4) − (3)
= 75,000 − 30,000 − 2,500 − 7,500
= ₹ 35,000 crores.

Illustration 63. Calculate : (*i*) Gross Value Added at Factor Cost, (*ii*) Value of Gross Product, (*iii*) Value of Net Product at Market Price, (*iv*) Net Value Added at Factor Cost:

Items	**₹ (in crores)**
1. Value of output	800
2. Cost of intermediate goods and services	600
3. Wages and salaries	100
4. Dividend	10
5. Indirect tax (net)	25
6. Depreciation	5
7. Retained profit	60

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Solution.

(*i*) Gross Value Added at MP = Gross value of output − Cost of intermediate goods and services
= 800 − 600 = ₹ 200 crores
GVA_{FC} = GVA_{MP} − Net indirect tax
= 200 − 25 = ₹ 175 crores.
(*ii*) Value of Gross Product = Gross value added (200)
(*iii*) Value of Net Product at MP = Value of gross product − Depreciation
= 200 − 5 = ₹ 195 crores.
(*iv*) NVA_{FC} = GVA_{FC} − Depreciation
= 175 − 5 = ₹ 170 crores.

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Illustration 64. Gross national product at market price is ₹ 2,000 crores and the capital stock is worth ₹ 4,000 crores. The capital stock depreciates at 12.5% per annum. Factor income from abroad is ₹ 400 crores and to abroad is ₹ 600 crores. Indirect taxes amount to ₹ 200 crores and subsidies are ₹ 30 crores. Find out:

(*i*) *NDP* at MP

(*ii*) *NDP* at FC.

Solution.

(*i*) NDP_{MP} = GNP_{MP} – Depreciation – Factor income from abroad + Factor income to abroad

= 2,000 – 500 – 400 + 600

= ₹ 1,700 crores.

(*ii*) NDP_{FC} = NDP_{MP} – Indirect taxes + Subsidies

= 1,700 – 200 + 30 = ₹ 1,530 crores.

Illustration 65. Use expenditure method to calculate Net National Product.

Items	**₹ (in crores)**
1. Non-govt. consumption expenditure	60,000
2. Government consumption expenditure	1,000
3. Non-govt. fixed capital investment	1,000
4. Govt. fixed capital investment	2,000
5. Investment of inventories	500
6. Depreciation	700
7. Net foreign investment	500
8. Company profit tax	1,500
9. Net indirect taxes	300
10. Operating surplus of govt. enterprises	900
11. Undistributed profit	1,200
12. Interest paid by the government	300

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Solution.

NNP by Expenditure Method = (1) + (2) + (3) + (4) + (5) + (7) – (6)

= 60,000 + 1,000 + 1,000 + 2,000 + 500 + 500 – 700

= ₹ 64,300 crores.

Illustration 66. Find out Gross Domestic Product at Market Price according to both Income Method and Expenditure Method. Show that the result shown by both the methods is the same:

Items	**₹ (in crores)**
1. Domestic consumption	60,000
2. Depreciation	800
3. Profit	18,000
4. Net foreign investment	4,000

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5. Wages	45,000
6. Gross domestic investment	16,800
7. Interest	9,000
8. Rent	8,000

Solution.

(*i*) GDP_{MP} by Income Method = (3) + (5) + (7) + (8) + (2)
= 18,000 + 45,000 + 9,000 + 8,000 + 800
= ₹ 80,800 crores.

(*ii*) GDP_{MP} by Expenditure Method = (1) + (4) + (6)
= 60,000 + 4,000 + 16,800
= ₹ 80,800 crores.

Illustration 67. Estimate *NI* by Expenditure Method:

Items	**₹ (in crores)**
1. Consumption of fixed capital	130
2. Net indirect taxes	220
3. Personal disposable income	1,570
4. Net exports	(–)70
5. Direct taxes paid by households	30
6. Private final consp. expenditure	1,340
7. Change in stock	60
8. Gross domestic fixed capital formation	400
9. Net factor income from abroad	(–)10
10. Govt. final consumption expenditure	210

Solution.

NI by Expenditure Method = (6) + (10) + (8) + (7) +(4) − (1) + (9) − (2)
= 1,340 + 210 + 400 + 60 + (–)70 − 130 + (–)10 − 220
= ₹ 1,580 crores.

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Illustration 68. From the data given below, calculate: (*i*) National Income with the help of Income Method and (*ii*) Gross Domestic Product at Factor Cost with the help of Expenditure Method:

Items	**₹ (in crores)**
1. Private final consumption expenditure	85
2. Net domestic fixed capital formation	25
3. Consumption of fixed capital	2
4. Closing stock	10
5. Opening stock	5
6. Government final consumption expenditure	10
7. Net exports	(–)5
8. Wages and salaries	90
9. Contribution of employers towards social security	10
10. Operating surplus	20

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11. Net factor income received from the rest of the world	5
12. Net indirect taxes	10

Solution.

(*i*) *NI* by Income = (8) + (10) + (11) + (9)
Method or NNP_{FC} = 90 + 120 + 5 + 10 = ₹ 125 crores.

(*ii*) GDP_{FC} by = (1) + (2) + (6) + [(4) − (5)] + (7) + (3) − (12)
Expenditure Method = 85 + 25 + 10 + (10 − 5) + (−)5 +2 − 10 = ₹ 112 crores.

Illustration 69. From the data given below, calculate (*i*) Gross National Product at Market Price by Expenditure Method and (*ii*) Gross Domestic Product at Market Price by Income Method.

Items	**₹ (in crores)**
1. Private final consumption expenditure	200
2. Government final consumption expenditure	20
3. Gross domestic capital formation	40
4. Net exports	(−)5
5. Wages and salaries	165
6. Employer's contribution to social security schemes	10
7. Profits	15
8. Interest	20
9. Indirect taxes	30
10. Subsidies	5
11. Rent	15
12. Net factor income from abroad	5
13. Consumption of fixed capital	5

Solution.

(*i*) GNP_{MP} by = (1) + (2) + (3) + (4) + (12)
Expenditure Method = 200 + 20 + 40 + (−)5 + 5 = ₹ 260 crores.

(*ii*) GDP_{MP} by = (5) + (6) + (7) + (8) + (11) + (13) + (9) − (10)
Income Method = 165 + 10 + 15 + 20 + 5 + 30 − 5 + 15 = ₹ 255 crores.

Illustration 70. From the following data calculate (*i*) Gross National Product at factor cost and (*ii*) Net National Disposable Income:

Items	**₹ (in crores)**
1. Net indirect tax	800
2. Net domestic fixed capital formation	500
3. Consumption of fixed capital	100
4. Private final consumption expenditure	5000
5. Govt. final consumption expenditure	2000
6. Net factor income to abroad	50
7. Net exports	(−)50

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8. Change in stock	(–)30
9. Current transfers from rest of the world	70
10. Compensation of employees	2500
11. Current transfers to rest of the world	40

Solution.

(*i*) GNP_{FC} = Private final consumption expenditure + Govt. final consumption expenditure + Net exports + [Net domestic fixed capital formation + Change in stock + Consumption of fixed capital] – Net indirect tax – Net factor income to abroad

= 5,000 + 2,000 + (– 50) + 500 + (– 30) + 100 – 800 – 50

= ₹ 6,670 crores.

(*ii*) NNDI = GNP_{FC} – Consumption of fixed capital + Net indirect tax + Current transfer from rest of the world – Current transfers to rest of the world

= 6670 – 100 + 800 + 70 – 40 = ₹ 7,400 crores.

Illustration 71. From the following data, calculate "national income" by (*a*) income method and (*b*) expenditure method:

Items	**₹ (in crores)**
1. Interest	150
2. Rent	250
3. Government final consumption expenditure	600
4. Private final consumption expenditure	1200
5. Profits	640
6. Compensation of employees	1000
7. Net factor income to abroad	30
8. Net indirect taxes	60
9. Net exports	(–) 40
10. Consumption of fixed capital	50
11. Net domestic capital formation	340

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Solution.

(*a*) National Income by Income Method = Compensation of employees + Interest + Rent + Profits – Net factor income to abroad

= 1,000 + 150 + 250 + 640 – 30

= ₹ 2,010 crores.

(*b*) National Income by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation – Net indirect taxes – Net factor income to abroad

= 1,200 + 600 + (–40) + 340 – 60 – 30 = ₹ 2,010 crores.

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Illustration 72. From the following data, calculate National Income by Income and Expenditure method:

Items	**₹ (in crores)**
1. Government final consumption expenditure	100
2. Subsidies	10
3. Rent	200
4. Wages and Salaries	600
5. Indirect tax	60
6. Private final consumption expenditure	800
7. Gross domestic capital formation	120
8. Social security contributions by employers	55
9. Royalty	25
10. Net factor income paid to abroad	30
11. Interest	20
12. Consumption of fixed capital	10
13. Profit	130
14. Net exports	70
15. Change in stock	50

Solution.

(*a*) National Income by Income Method = Wages and salaries + Social security contributions by employers + Rent + Royalty + Interest + Profit − Net factor income paid to abroad

= 600 + 55 + 200 + 25 + 20 + 130 − 30

= ₹ 1,000 crores.

(*b*) National Income by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Gross domestic capital formation − Consumption of fixed capital − Indirect tax + Subsidies − Net factor income paid abroad

= 800 + 100 + 70 + 120 − 10 − 60 + 10 − 30

= ₹ 1,000 crores.

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Illustration 73. There are only two producing sectors *A* and *B* in an economy. Calculate (*a*) Gross value added at market price by each sector, (*b*) National income.

Items	**₹ (in crores)**
1. Net factor income from abroad	20
2. Sales by A	1000
3. Sales by B	2000
4. Change in Stock of B	(−) 200
5. Closing stock of A	50
6. Opening Stock of A	100
7. Consumption of fixed capital by A and B	180

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8. Indirect taxes paid by A and B	120
9. Purchases of raw materials, etc. by A	500
10. Purchases of raw materials, etc. by B	600
11. Exports by B	70

Solution.

(*a*) Gross Value Added at Market Price by

Sector A = Sales by A + Closing stock A − Opening stock of A − Purchases of raw materials etc. by A
= 1,000 + 50 − 100 − 500
= ₹ 450 crores.

Sector B = Sales by B + Change in stock of B − Purchases of raw materials etc. by B + Export by B
= 2000 + (− 200) − 600 + 70
= ₹ 1,270 crores.

(*b*) National Income = GVAMP (A + B) − Consumption of fixed capital by A and B − Indirect taxes paid by A and B + Net factor income from abroad
= (450 + 1,270) − 180 − 120 + 20
= ₹ 1,440 crores.

Illustration 74. Calculate National Income and Gross National Disposable Income:

Items	**₹ (in crores)**
1. Exports	80
2. Private final consumption expenditure	600
3. Net current transfer to the rest of the world	(–) 5
4. Government final consumption expenditure	100
5. Subsidies	20
6. Indirect taxes	80
7. Net domestic fixed capital formation	150
8. Net factor income from abroad	(–) 10
9. Closing stock	60
10. Opening stock	10
11. Net imports	50
12. Consumption of fixed capital	50

Solution.

(*a*) National Income = Private final consumption expenditure + Government final consumption expenditure − Net imports + Net domestic fixed capital formation + Closing stock − Opening stock − Indirect tax + Subsidies + Net factor income from abroad
= 600 + 100 − 50 + 150 + 60 − 10 − 80 + 20 + (−10)
= ₹ 780 crores.

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(*b*) GNDI = National income + Consumption of fixed capital + Indirect tax − Subsidies − Net current transfers to the rest of the world
= 780 + 50 + 80 − 20 − (−5)
= ₹ 895 crores.

Illustration 75. Calculate Gross National Product at Market Price and Net National Disposable Income:

Items	₹ (in crores)
1. Net current transfers from abroad	10
2. Wages and Salaries	800
3. Net indirect taxes	140
4. Social security contributions by employers	100
5. Consumption of fixed capital	80
6. Rent	200
7. Net factor income to abroad	20
8. Royalty	50
9. Personal tax	90
10. Corporation tax	50
11. Profit before tax	150
12. Interest	300

Solution.

(*a*) GNP_{MP} = Wages and salaries + Social security contribution by employers + Rent + Royalty + Profits before tax + Interest + Consumption of fixed capital + Net indirect tax − Net factor income to abroad
= 800 + 100 + 200 + 50 + 150 + 300 + 80 + 140 − 20
= ₹ 1800 crores.

(*b*) NNDI = GNP_{MP} − Consumption of fixed capital + Net current transfers from abroad
= 1800 − 80 + 10
= ₹ 1,730 crores.

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Illustration 76. Calculate Gross National Product at Market Price and Net National Disposable Income:

Items	₹ (in crores)
1. Net current transfers from abroad	(−) 10
2. Compensation of employees	800
3. Net indirect tax	50
4. Social security contributions by employers	80
5. Consumption of fixed capital	30
6. Rent	300
7. Net factor income to abroad	10
8. Interest paid by production units	400
9. Royalty	40

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10. National debt interest	14
11. Profit after tax	250
12. Retained earnings	20
13. Corporation tax	50

Solution.

(*a*) GNP_{MP} = Compensation of employees + Rent + Royalty + Interest paid by production units + [Profit after tax + Corporation tax] + Consumption of fixed capital + Net indirect tax − Net factor income to abroad

= 800 + 300 + 40 + 400 + [250 + 50] + 30 − 10 + 50

= ₹ 1,910 crores.

(*b*) NNDI = GNP_{MP} − Consumption of fixed capital + Net current transfers from abroad

= 1910 − 30 + (−10)

= ₹ 1,870 crores.

Illustration 77. Find National Income and Net National Disposable Income:

Items	**₹ (in crores)**
1. Exports	25
2. Government final consumption expenditure	300
3. Net current transfers to rest of the world	(−) 10
4. Net domestic fixed capital formation	200
5. Net factor income to abroad	20
6. Private final consumption expenditure	1000
7. Net indirect tax	30
8. Opening stock	60
9. Net Imports	30
10. Closing stock	50

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Solution.

(*a*) National Income = Private final consumption expenditure + Government final consumption expenditure − Net imports + Net domestic fixed capital formation + Closing stock − Opening stock − Net indirect tax − Net factor income to abroad

= 1,000 + 300 − 30 + 200 + 50 − 60 − 30 − 20

= ₹ 1,410 crores.

(*b*) NNDI = National Income + Net indirect tax − Net current transfers to the rest of the world

= 1,410 + 30 − (−10)

= ₹ 1,450 crores.

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Illustration 78. Calculate (*a*) Gross domestic product at market price and (*b*) Factor income from abroad from the following data:

Items	**₹ (in crores)**
1. Profits	500
2. Exports	40
3. Compensation of employees	1,500
4. Gross national product at factor cost	2,800
5. Net current transfer from rest of the world	90
6. Rent	300
7. Interest	400
8. Factor income to abroad	120
9. Net indirect taxes	250
10. Net domestic capital formation	650
11. Gross fixed capital formation	700
12. Change in stock	50

Solution.

(*a*) GDP_{MP} = ?

NDP_{FC} = 500 + 1500 + 300 + 400

NDP_{FC} = ₹ 2700 crores.

NDCF + Depn = GFCF + Change in stock

650 + Depn = 700 + 50

Depn = 750 − 650

Depn = 100.

(*b*) $GDP_{MP} = NDP_{FC}$ + Depn + NIT

NFIA = factor income from abroad − factor income to abroad

GDP_{MP} = 2700 + 100 + 250

GDP_{MP} = 3050 crores.

$GDP_{MP} = GNP_{FC}$ − NFIA + NIT

3050 = 2800 − (*x* − 120) + 250

3050 = 2800 − *x* + 120 + 250

x = 3170 − 3050

Factor income from abroad = ₹ 120 crores.

Illustration 79. Calculate National Income and Gross National Disposable Income from the following:

Items	**₹ (in crores)**
(i) Net current transfers to the rest of the world	(−)5
(ii) Private final consumption expenditure	500

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(iii) Consumption of fixed capital	20
(iv) Net factor income to abroad	(–)10
(v) Government final consumption expenditure	200
(vi) Net indirect tax	100
(vii) Net domestic fixed capital formation	120
(viii) Net imports	30
(ix) Change in stocks	(–)20

Solution.

(*a*) N.I. = (ii) + (v) + (vii + ix) – (viii) – (vi) – (iv)
= 500 + 200 + 120 + (– 20) – 30 – 100 – (– 10)
= 500 + 200 + 120 – 20 – 30 – 100 + 10
= ₹ 680 crore.

(*b*) GNDI = N.I. + (iii) + (vi) – (i)
= 680 + 20 + 100 – (– 5)
= ₹ 805 crore.

Illustration 80. Calculate Net National Product at Market Price and Gross National Disposable Income:

Items	**₹ (in arab)**
(i) Consumption of fixed capital	40
(ii) Change in stocks	(–)10
(iii) Net imports	20
(iv) Gross domestic fixed capital formation	100
(v) Private final consumption expenditure	800
(vi) Net current transfers to the rest of the world	5
(vii) Government final consumption expenditure	250
(viii) Net factor income to abroad	40
(ix) Net indirect tax	130

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Solution.

(*a*) NNP_{MP} = (v) + (vii) + (iv) + (ii) – (i) – (iii) – (iii)
= 800 + 250 + 100 + (–10) – 40 – 20 – 40
= ₹ 1,040 arab.

(*b*) GNDI = GNP_{MP} + net current transfer from ROW
= NNP_{MP} + (i) – (vi)
= 1,040 + 40 – 5
= ₹ 1,075 arab.

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Illustration 81. Calculate (*a*) 'Gross National Product at Market Price' and (*b*) 'Personal Disposable Income' from the following:

Items	**₹ (in crores)**
(i) Net factor income to abroad	10
(ii) Private income	1700
(iii) Operatng surplus	300
(iv) Corporation tax	150
(v) Undistributed profits	30
(vi) Mixed income	500
(vii) Consumption of fixed capital	100
(viii) Personal taxes	200
(ix) Compensation of employees	1200
(x) Net indirect tax	250

Solution.

(*a*) GNP_{MP} = (ix) + (iii) + (vi) + (x) + (vii)
= 1,200 + 300 + 500 + 250 + 100
= ₹ 2,350 crore.

(*b*) PDI = (ii) − (iv) − (v) − (viii)
= 1,700 − 150 − 30 − 200
= ₹ 1,320 crore.

Illustration 82. Calculate (*a*) 'Net National Product at Market Price' and (*b*) 'Private Income' from the following:

Items	**₹ (in crores)**
(i) Net current transfers to abroad	30
(ii) Mixed income	600
(iii) Subsidies	20
(iv) Operating surplus	200
(v) National debt interest	70
(vi) Net factor income to abroad	10
(vii) Compensation of employees	1400
(viii) Indirect tax	100
(ix) Domestic product accruing to government	350
(x) Current transfers by government.	50

Solution.

(*a*) NNP_{MP} = (vii) + (vi) + (ii) + (viii − iii) − (vi)
= 1,400 + 200 + 600 + (100 − 20) − 10
= ₹ 2,270 crores.

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(*b*) Private Income = NDP_{FC} − Income from domestic product accruing to pub. sec. − net current transfers to abroad − NFIA
= [2,270 − (100 − 20) + 10] − 350 − 30 − 10
= ₹ 1,810 crores.

Illustration 83. Calculate (a) 'Net Domestic Product at Factor Cost' and (b) 'Private Income' from the following:

Items	₹ (in crores)
(i) Domestic product accruing to government	300
(ii) Wages and salaries	1000
(iii) Net current transfers to abroad	(−)20
(iv) Rent	100
(v) Interest paid by the production units	130
(vi) National debt interest	30
(vii) Corporation tax	50
(viii) Current transfers by government	40
(ix) Contribution to social security schemes by employers	200
(x) Dividends	100
(xi) Undistributed profits	20
(xii) Net factor income to abroad	0

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Solution.

(*a*) NDP_{FC} = (ii + ix) + (iv) + (v) + (vii + x + xi)
= 1000 + 200 + 100 + 130 + 50 + 100 + 20
= ₹ 1600 crores

(*b*) Pvt. Income = NDP_{FC} − (i) − (iii) + (vi) + (viii) − (xii)
= 1600 − 300 − (−20) + 30 + 40 − 0
= ₹ 1390 crores

Illustration 84. Calculate National Income and Personal Disposable Income from the following:

Items	₹ (in crores)
(i) Personal tax	150
(ii) Net imports	(−)10
(iii) Private final consumption expenditure	700
(iv) Private income	600
(v) Undistributed profit	20
(vi) Net domestic capital formation	120
(vii) Government final consumption expenditure	200
(viii) Net factor income to abroad	(−)5
(ix) Corporation tax	100
(x) Net indirect tax	105

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Solution.

(*a*) NI = (iii) + (vii) + (vi) − (ii) − (x) − (viii)
= 700 + 200 + 120 − (− 10) − (105) − (− 5)
= 900 + 120 + 10 − 105 + 5
= 1020 + 10 − 105 + 5
= 1020 + 15 − 105
= 1035 − 105
= ₹ 930 crores

(*b*) PDI = (iv) − (ix) − (v) − (i)
= 600 − 100 − 20 − 150
= ₹ 330 crores

Illustration 85. Find out (a) national income and (b) net national disposable income: (*Delhi 2012*)

Items	**₹ (in crores)**
(i) Factor income from abroad	15
(ii) Private final consumption expenditure	600
(iii) Consumption of fixed capital	50
(iv) Government final consumption expenditure	200
(v) Net current transfers to abroad	(−) 5
(vi) Net domestic fixed capital formation	110
(vii) Net factor income to abroad	10
(viii) Net imports	(−) 20
(ix) Net indirect tax	70
(x) Change in stocks	(−) 10

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Solution.

(*a*) N.I. = (ii) + (iv) +(vi) + (x) − (viii) − (ix) − (vii)
= 600 + 200 + 110 + (−10) − (−20) − 70 −10
= 600 + 200 + 110 − 10 + 20 − 70 − 10
= ₹ 840 crore

(*b*) NNDI = N.I + (ix) − (v)
= 840 + 70 − (−5)
= ₹ 915 crore

Illustration 86. Find out (a) Gross National Product at Market Price and (b) Net Current Transfers to Abroad: (*AI 2012*)

Items	**₹ (in crores)**
(i) Private final consumption expenditure	1000
(ii) Depreciation	100

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(iii) Net national disposable income	1500
(iv) Closing stock	20
(v) Government final consumption expenditure	300
(vi) Net indirect tax	50
(vii) Opening stock	20
(viii) Net domestic fixed capital formation	110
(ix) Net exports	15
(x) Net factor income to abroad	(–) 10

Solution.

(*a*) GNP_{MP} = (i) + (v) + (viii) + [iv – vii] + (ix) – (x) + (ii)
= 1,000 + 300 + 110 + [20 – 20] + 15 – (–10) + 100
= ₹ 1535 crore

(*b*) Net Current Transfers to Abroad = $NNDI - NNP_{MP}$
= 1,500 – [1,535 – 100]
= 1,500 – 1,435
= ₹ 65 crore

Illustration 87. Find out (a) Net National Product at Market Price and (b) Gross National Disposable Income: (*Foreign 2012*)

Items	**₹ (in crores)**
(i) Wages and Salaries	700
(ii) Rent	100
(iii) Net current transfers to abroad	10
(iv) Net indirect tax	70
(v) Royalty	50
(vi) Profits	300
(vii) Net factor income to abroad	(–) 20
(viii) Consumption of fixed capital	120
(ix) Social security contribution by employers	60
(x) Social security contribution by employees	40
(xi) Interest	400

Solution.

(*a*) NNP_{MP} = (i) + (ii) + (v) + (vi) + (ix) + (xi) + (iv) – (vii)
= 700 + 100 + 50 + 300 + 60 + 400 + 70 – (–20)
= ₹ 1,700 crore

(*b*) GNDI = GNP_{MP} + Net Current Transfers received from Abroad
= NNP_{MP} + (viii) – (iii)
= 1700 + 120 – 10
= ₹ 1,810 crore

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Illustration 88. Find out (a) Net National Product at Market Price and (b) Gross National Disposable Income: (*Delhi 2012*)

Items	**₹ (in crores)**
(i) Net current transfers from abroad	(–) 10
(ii) Wages and Salaries	1,000
(iii) Net factor income to aborad	(–) 20
(iv) Social security contributions by employers	100
(v) Net Indirect Tax	80
(vi) Rent	300
(vii) Consumption of fixed capital	120
(viii) Corporation Tax	50
(ix) Dividend	200
(x) Undistributed profits	60
(xi) Interest	400

Solution.

(*a*) NNP_{MP} = (ii + iv) + (vi) + (xi) + (viii + ix + x) + (v) – (iii)
= 1,000 + 100 + 300 + 400 + 50 + 200 + 60 + 80 – (–20)
= ₹ 2,210 crore

(*b*) GNDI = NNP_{MP} + (vii) + (i)
= 2,210 + 120 + (–10) = ₹ 2,320 crore

Illustration 89. Find out (a) Gross National Product at Market Price and (b) Net Current Transfers from Abroad: (*Delhi 2012*)

Items	**₹ (in crores)**
(i) Net indirect tax	35
(ii) Private final consumption expenditure	500
(iii) Net national disposable income	750
(iv) Closing stock	10
(v) Government final consumption expenditure	150
(vi) Net domestic fixed capital formation	100
(vii) Net factor income to abroad	(–) 15
(viii) Net imports	20
(ix) Opening stock	10
(x) Consumption of fixed capital	50

Solution.

(*a*) GNP_{MP} = (ii) + (v) + (vi + iv – ix + x) – (viii) – (vii)
= 500 + 150 + (100 + 10 – 10 + 50) – (20) – (–15)
= ₹ 795 crore

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(*b*) NCTFA = (iii) − (GNP_{MP} − x)
= 750 − 795 + 50
= ₹ 5 crore

Illustration 90. Find out (a) Net National Product at Market Price and (b) Gross National Disposable Income from the following: (*AI 2012*)

Items	₹ (in crores)
(i) Undistributed profits	20
(ii) Compensation of employees	800
(iii) Rent	300
(iv) Dividend	100
(v) Royalty	40
(vi) Net current transfers to abroad	(−) 30
(vii) Corporation tax	50
(viii) Interest	400
(ix) Depreciation	70
(x) Net factor income from abroad	(−) 10
(xi) Net Indirect tax	60

Solution.

(*a*) NNP_{MP} = 800 + 300 + 40 + 400 + [100 + 50 + 20] + (−10) + 60
= ₹ 1,760 crore

(*b*) GNDI = GNP_{MP} − Net current transfer to abroad
= (1,760 + 70) − (−30)
= ₹ 1,860 crore

[**Note**: Profit = Dividend + Corporation Tax + Undistributed Profit.]

Illustration 91. Find out (a) National Income and (b) Net National Disposable Income: (*AI 2012*)

Items	₹ (in crores)
(i) Net imports	(−) 10
(ii) Net domestic fixed capital formation	100
(iii) Private final consumption expenditure	600
(iv) Consumption of fixed capital	60
(v) Change in stocks	(−) 50
(vi) Government final consumption expenditure	200
(vii) Net factor income to abroad	20
(viii) Net current transfers to abroad	30
(ix) Net indirect tax	70
(x) Factor income from abroad	10

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Solution.

(*a*) NI = 600 + 200 + 100 + (−50) − (−10) − 20 − 70
= ₹ 770 crore

(*b*) NNDI = NNP_{MP} + Net current transfer from ROW
= 770 + 70 − 30
= ₹ 810 crore

Illustration 92. Find out (a) Gross National Product at Market Price and (b) Net Current Transfers from Abroad: (*Foreign 2012*)

Items	**₹ (in crores)**
(i) Net national disposable income	1,100
(ii) Net indirect tax	120
(iii) Private final consumption expenditure	750
(iv) Government final consumption expenditure	250
(v) Net domestic fixed capital formation	200
(vi) Net imports	(−) 40
(vii) Net factor income to abroad	(−) 20
(viii) Depreciation	50
(ix) Change in stock	10

Solution.

(*a*) GNP_{MP} = 750 + 250 + 200 + 10 − (−20) + 50 − (−40)
= ₹ 1320 crore

(*b*) Net Current Transfers from Abroad = NNDI − NNP_{MP}
= 1,100 − (1,320 − 50)
= ₹ (−) 170 crore

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Illustration 93. Find out (a) National Income and (b) Net National Disposable Income: (*Foreign 2012*)

Items	**₹ (in crores)**
(i) Net domestic fixed capital formation	200
(ii) Factor income from abroad	30
(iii) Change in stock	(−) 20
(iv) Net indirect tax	120
(v) Net current transfers to abroad	(−) 10
(vi) Private final consumption expenditure	800
(vii) Consumption of fixed capital	100
(viii) Government final consumption expenditure	300
(ix) Net factor income to abroad	40
(x) Net imports	(−) 50

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Solution.

(*a*) NI = 300 + 800 + 200 + (–20) – (–50) – 40 – 120
= ₹ 1,170 crore

(*b*) NNDI = NNP_{MP} + Net current transfer from ROW
= [1,170 + 120] – (–10) = ₹ 1,300 crore

Illustration 94. Calculate Gross Value Added at Factor Cost. (*Delhi 2012*)

	Items	
(i)	Units of output sold (units)	1,000
(ii)	Price per unit of output (₹)	30
(iii)	Depreciation (₹)	1,000
(iv)	Intermediate cost (₹)	12,000
(v)	Closing stock (₹)	3,000
(vi)	Opening stock (₹)	2,000
(vii)	Excise (₹)	2,500
(viii)	Sales tax (₹)	3,500

Solution.

GVA_{FC} = (i × ii) + (v – vi) – (iv) – (vii) – (viii)
= (1,000 × 30) + (3,000 – 2,000) – 12,000 – 2,500 – 3,500
= ₹ 13,000

Illustration 95. Find Net Value Added at Market Price: (*Delhi 2012*)

	Items	
(i)	Output sold (units)	800
(ii)	Price per unit of output (₹)	20
(iii)	Excise (₹)	1,600
(iv)	Import duty (₹)	400
(v)	Net change in stocks (₹)	(–) 500
(vi)	Depreciation (₹)	1,000
(vii)	Intermediate Cost (₹)	8,000

Solution.

NVA_{MP} = (i × ii) + (v) – (vii) – (vi)
= (800 × 20) + (–500) – 8,000 – 1,000
= 16,000 – 500 – 8,000 – 1,000 = ₹ 6,500

Illustration 96. Find out Net Value Added at Factor Cost: (*AI 2012*)

	Items	
(i)	Price per unit of output (₹)	25
(ii)	Output sold (units)	1,000

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(iii) Excise duty (₹)	5,000
(iv) Depreciation (₹)	1,000
(v) Change in stocks (₹)	(–) 500
(vi) Intermediate costs (₹)	7,000

Solution.

NVA_{FC} = (i × ii) + (v) – (vi) – (iv) – (iii)
= (25 × 1,000) + (–500) – 7,000 – 1,000 – 5,000
= ₹ 11,500

Illustration 97. Find Gross Value Added at Factor Cost: (*Foreign 2012*)

Items	
(i) Import duty (₹)	1,000
(ii) Excise (₹)	2,000
(iii) Output sold (units)	6,000
(iv) Price per unit of output (₹)	6
(v) Change in stock (₹)	600
(vi) Intermediate cost (₹)	16,000
(vii) Subsidy (₹)	500

Solution.

GVA_{FC} = (iii × iv) + (v) – (vi) + (vii) – (i) – (ii)
= (6,000 × 6) + 600 – 16,000 + 500 – 1,000 – 2,000
= ₹ 18,100

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Points to Remember

Circular Flow of Income/Product

1. **Meaning.** It implies the flow of goods and services or the flow of money across different sectors of an economy. Each flow shows how one sector depends on the other.
2. **Circular flow is of two types:**
   (*i*) **Real flows** show flow of goods and services across different sectors.
   (*ii*) **Money flows** (or income flows) show flow of money across different sectors.
3. **Significance of Circular Flow Models.** Circular flow models are significant as they:
   (*a*) show interdependence between different sectors,
   (*b*) give knowledge of structure of the economy,
   (*c*) facilitate estimation of national income and
   (*d*) give knowledge of injections and withdrawals.

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Circular flow in Two-Sector, Three-Sector and Four-Sector Economy

The economy is divided into three sectors: (*a*) Household sector, (*b*) Firm sector, (*c*) Government sector and (*d*) Foreign sector. Circular flow in a closed economy deals with household, firm and government sectors.

Concepts of Injections and Leakages

1. **Injections.** Government spending, investment, exports are the important injections into the circular flow. Increase in these variables raises the level of economic activity in the economy or magnitude of circular flow.
2. **Leakages.** Savings, taxes and imports are the important withdrawals (leakages) from the circular flow. Increase in these variables reduces the level of economic activity in the economy or magnitude of circular flow.

Different Methods of Measuring National Income

There are three methods of measuring national income. They are: (*i*) Income method, (*ii*) Value added, and (*iii*) Expenditure method.

Income Method

1. Meaning

In this method, we take sum total of factor incomes earned by the normal residents of a country during a year. It is also called Factor Payment or Distribution Share Method.

2. Steps Involved

The following steps are involved in the estimation of national income by using income method:

1. Identification and classification of producing enterprises which employ factor inputs.
2. Classification of factor income.
3. Estimation of factor income.
4. Estimation of national income (*i.e.*, NNP_{FC}).

3. Precautions

1. Transfer incomes should not be included.
2. Income from illegal activities should not be included.
3. Income from sale of second-hand goods should not be included.
4. Corporation tax should not be recorded separately as it is part of profit.
5. Indirect taxes are included in calculation of national income.
6. Money received by way of sale of shares/bonds, etc., should not be included.
7. Windfall gains do not form part of national income.
8. Wages and salaries in kind are included in *COE* and not included separately in *NI*.
9. Production for self-consumption should be included.
10. Imputed rent is a part of rental income.
11. Death duty, wealth tax, gift tax, etc., are not included in the national income.

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Value Added Method (or Product Method)

1. Meaning

In Value Added Method, national income is estimated by adding contribution of each producing enterprise in production of final goods and services produced in an economy during a year.

2. Steps Involved

The following steps are involved while estimating national income by value added method:

1. Identification and classification of productive enterprises.
2. Estimation of gross value added.
3. Estimation of national income.

3. Difficulty

If intermediate goods and services are included, it leads to the problem of *double counting*.

4. Precautions

1. Sale and purchase of second-hand goods are not included.
2. The value of intermediate consumption is also not included.
3. Production for self-consumption should be included.
4. Services of owner-occupied houses should be included.
5. Own-account production of fixed capital should be included.
6. Domestic services are not included.
7. Voluntary work done for community is not included.

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Expenditure Method

1. Meaning

In this method, final expenditure on *GDP* at market price during an accounting year is measured.

2. Its components are: 1. Final consumption expenditure, 2. Gross domestic capital formation (*GDCF*), 3. Change in stock, 4. Valuables, 5. Net exports.

3. Steps Involved

1. Identification of economic unit incurring final expenditure.
2. Classification of final expenditure.

   The major components of the final consumption expenditure are as follows: (*a*) Private final consumption expenditure. (*b*) Government final consumption expenditure. The major components of *GDCF* are:(*a*) Gross domestic fixed capital formation (*b*) Net acquisition of valuables (*c*) Change in stock.

   By adding final consumption expenditure, *GDCF* and net exports, we obtain GDP_{MP}. NNP_{FC} can be estimated by adding to final expenditure on domestic product (*i.e.*, GDP_{MP}) the net factor income from abroad and subtracting net indirect taxes.
3. Estimation of final expenditure.

4. Precautions

1. Expenditure on second-hand goods should be excluded.
2. Expenditure on shares/bonds, etc., should be excluded.

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3. Government expenditure on transfer payments should not be included.
4. Expenditure on intermediate goods should not be taken into account.

The Three Methods Reconciled

National Income = National Product = National Expenditure

Value of *NI* is identical whether it is calculated by income method or value added method or expenditure method. With value added method *NI* is calculated at creation level, with income method at distribution level and with expenditure method at disposal level.

Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. What are leakages?
2. What are injections?
3. What is a circular flow?
4. Define net indirect taxes.
5. What are subsidies?
6. Name items not included in GNP_{MP}.
7. What is net factor income from abroad?
8. How is NDP_{MP} calculated?
9. If we deduct NDP_{FC} from NDP_{MP}, what do we get?
10. Is stock of inventories included in *NI*?
11. Are pension on retirement, dividend and bonus included in *NI*?
12. Give two examples of income that are excluded from income method.
13. Give two examples of items that are excluded from value added method.
14. Give two examples of items that are excluded from expenditure method.
15. Define double counting.
16. Give three examples of primary sector.

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Multiple Choice Questions

1. Leakage can be:
   (*a*) savings (*b*) taxes (*c*) imports (*d*) All of the above
2. Injection can be:
   (*a*) investment (*b*) government purchases
   (*c*) exports (*d*) All of the above
3. Income method of measuring national income is also called:
   (*a*) Factor payment method (*b*) Industrial origin method
   (*c*) Income disposal method (*d*) All of the above
4. Expenditure method of measuring national income is also called:
   (*a*) Factor payment method (*b*) Industrial origin method
   (*c*) Income disposal method (*d*) All of the above

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5. Value added method of measuring national income is also called:
(*a*) Factor payment method (*b*) Industrial origin method
(*c*) Income disposal method (*d*) All of the above

6. Income from property may be:
(*a*) Rent (*b*) Royalty (*c*) Interest (*d*) All of the above

7. Compensation in kind can be:
(*a*) CCA (*b*) Dearness allowance (*d*) Rent (*d*) None of the above

Short Answer Type Questions **(*3/4 Marks*)**

1. Give the components of national income by income method.
2. Give the components of national income by value added method.
3. Give the components of national income by expenditure method.
4. What precautions should be taken in estimating *NI* by income method?
5. What precautions should be taken in estimating *NI* by expenditure method?
6. What precautions should be taken in estimating *NI* by value added method?
7. What will happen if the value of intermediate consumption is included in *NI*?
8. Fill in the blanks
(*i*) $NNP_{FC} = NDP_{FC}$ + _____.
(*ii*) _____ = GDP_{FC} + net indirect taxes.
(*iii*) _____ = NNP_{FC} + depreciation.
(*iv*) $GDP = NDP$ + _____.
9. What is change in stock? How do we calculate it?
10. What type of data is required to measure *NI* by each of the three methods?
11. Explain value added method of calculating national income.
12. Explain expenditure method of calculating national income.
13. How can the three methods of measuring national income be reconciled?
14. Differentiate between NDP_{MP} and NNP_{MP}.
15. Are the following included in *NI* and why?
(*a*) Sale of an old house.
(*b*) Free meals given to an employee.
(*c*) Services of owner-occupied houses.
(*d*) Purchase of car by a household.
16. Giving reason, explain how the following should be treated while estimating national income:
(*i*) Payment of excise duty by a firm. (*Foreign 2012*)
(*ii*) Payment of interest by a firm.

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17. How should the following be treated while estimating national income? Give reasons for your answer. (*Foreign 2012*)

(*i*) Festival gift from an employer.

(*ii*) Rent free house from an employer.

18. Giving reason, explain how the following should be treated while estimating national income: (*Foreign 2012*)

(*i*) Free medical facilities by the employer.

(*ii*) Contribution to provident fund by employees.

19. Giving reason, explain how should the following be treated while estimating national income: (*AI 2012*)

(*i*) Expenditure on free services provided by government.

(*ii*) Payment of interest by a government firm.

20. How should the following be treated while estimating National Income? Give reasons.

(*i*) Expenditure on education of children by a family. (*AI 2012*)

(*ii*) Payment of electricity bill by a school.

21. Giving reason, explain how should the following be treated in estimating national income:

(*i*) Interest paid by banks on deposits by individuals. (*Delhi 2012*)

(*ii*) National debt interest.

22. Giving reason, explain how should the following be treated while estimating national income: (*Delhi 2012*)

(*i*) Payment of bonus by a firm.

(*ii*) Payment of interest on a loan taken by an employee from the employer.

23. Why are net exports included in national income? Explain. (*Delhi 2012*)

24. Explain the circular flow of income. (*Delhi 2013*)

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Long Answer Type Questions **(*6 Marks*)**

1. Describe the circular flow of income in a three-sector economy with financial system.

2. Explain the concept of injections and leakages.

3. Give meaning of circular flow of income. What are its different types? Explain its significance.

4. Explain the circular flow of income in a four-sector economy.

5. Giving reasons, explain how the following are treated while estimating national income: (*Delhi 2008*)

(*a*) Payment of fees to a lawyer engaged by a firm.

(*b*) Rent-free house to an employee by an employer.

(*c*) Purchases by foreign tourists.

6. Give reasons, explain how the following are treated in estimating national income: (*AI 2008*)

(*a*) Wheat grown by a farmer but used entirely for family's consumption.

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(*b*) Earnings of the shareholders from the sale of shares.

(*c*) Expenditure by government on providing free education.

7. Explain the circular flow of income (*Foreign 2010*)

8. Give reasons and explain how the following are treated in estimating National Income: (*Foreign 2008*)

(*a*) Purchase of a truck to carry goods by a production unit.

(*b*) Payment of income tax by a production unit.

(*c*) Services rendered by family members to each other.

9. Are the following a part of a country's 'net domestic product at market price'? Explain. (*Delhi 2008*)

(*a*) Net indirect taxes.

(*b*) Net exports.

(*c*) Net factor income from abroad.

(*d*) Consumption of fixed capital.

10. Are the following included in national income? Give reasons for your answer. (*Delhi 2008*)

(*a*) Dividends received on shares.

(*b*) Money received from sale of shares.

(*c*) Gifts received from employer.

(*d*) Interest on public debt.

11. How will you treat the following while estimating domestic factor income of India? (*Delhi 2009*)

(*i*) Remittances from non-resident Indians to their families in India.

(*ii*) Rent paid by the embassy of Japan in India to an Indian resident.

(*iii*) Profits earned by branches of foreign bank in India.

12. How will you treat the following while estimating national income of India? Give reasons for your answer. (*Delhi 2009*)

(*i*) Salaries received by Indian residents working in Russian Embassy in India.

(*ii*) Profits earned by an Indian bank from its branches abroad.

(*iii*) Entertainment tax received by the government.

13. How will you treat the following while estimating national income of India? Give reasons for your answer. (*Delhi 2009*)

(*i*) Salaries paid to Russians working in Indian Embassy in Russia.

(*ii*) Profits earned by an Indian company from its branch in Singapore.

(*iii*) Capital gains to Indian residents from sale of shares of a foreign company.

14. While estimating national income, how will you treat the following? Give reasons for your answer. (*AI 2009*)

(*i*) Imputed rent of self-occupied houses.

(*ii*) Interest received on debentures.

(*iii*) Financial help received by flood victims.

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15. How will you treat the following while estimating national income? Give reasons for your answer. (*AI 2009*)
(*i*) Capital gain on sale of a house.
(*ii*) Prize won in a lottery.
(*iii*) Interest on public debt.

16. While calculating national income of India from its domestic factor income, how will you treat the following? Give reasons for your answer. (*Foreign 2009*)
(*i*) Salaries received by Indian working in branches of foreign banks in India.
(*ii*) Profits earned by an Indian bank from its branches abroad.
(*iii*) Rent paid by embassy of Japan in India to an Indian resident.

17. State whether the following statements are true or false. Give reasons for your answer: (*Sample Paper 2009*)
(*i*) Capital formation is a flow.
(*ii*) Bread is always a consumer good.
(*iii*) Nominal *GDP* can never be less than Real *GDP*.
(*iv*) Gross domestic capital formation is always greater than gross fixed capital formation.

18. Give reason, whether the following are included in national income: (*Delhi 2009*)
(*i*) Profits earned by branch of a foreign bank.
(*ii*) Interest paid by an individual on a loan taken to buy a car.
(*iii*) Expenditure on machines for installation in a factory.

19. Give reason and explain whether the following are included in domestic product of India: (*AI 2009*)
(*i*) Profits earned by a branch of foreign bank in India.
(*ii*) Payment of salaries to its staff by an embassy located in New Delhi.
(*iii*) Interest received by an Indian resident from firms abroad.

20. How will you treat the following in estimating national income of India? Give reasons for your answer. (*Foreign 2010*)
(*i*) Value of bonus shares received by shareholders of a company.
(*ii*) Fees received from students.
(*iii*) Interest received on loan given to a foreign company in India.

21. How will you treat the following while estimating national income of India? (*Delhi 2010*)
(*i*) Dividend received by an Indian from his investment in shares of a foreign company.
(*ii*) Money received by a family in India from relatives working abroad.
(*iii*) Interest received on loans given to a friend for purchasing a car.

22. How will you treat the following while estimating national income of India? Give reasons for your answer. (*AI 2010*)
(*i*) Dividend received by a foreigner from investment in shares of an Indian company.
(*ii*) Profits earned by a branch of an Indian bank in Canada.
(*iii*) Scholarship given to Indian students studying in India by a foreign company.

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23. Giving reasons, state whether the following statements are true or false. (*Delhi 2012*)

(*i*) Real gross domestic product can be equal to nominal gross domestic product.

(*ii*) Savings are a stock.

(*iii*) Butter is only a final product.

24. How will you treat the following in the calculation of Gross Domestic Product of India? Give reasons for your answer. (*AI 2012*)

(*i*) Profits earned by a branch of foreign bank in India.

(*ii*) Salaries of Indian employees working in embassy of Japan in India.

(*iii*) Salary of residents of Japan working in Indian embassy in Japan.

25. How will you treat the following while calculating domestic product of India? Give reasons for your answer. (*Foreign 2013*)

(*i*) Profits earned by a foreign company in India.

(*ii*) Salary of Indian residents working in Russian Embassy in India.

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Numerical Exercises

Short Answer Type Questions **(*3/4 Marks*)**

1. Calculate value of output from the following data:

Items	₹ (*in lakhs*)
1. Net value added at factor cost	100
2. Intermediate consumption	75
3. Excise duty	20
4. Subsidy	5
5. Depreciation	10

[*Ans.* ₹ 200 *lakhs*] (*Delhi 2008*)

2. Calculate intermediate consumption from the following data:

Items	₹ (*in lakhs*)
1. Value of output	200
2. Net value added at factor cost	80
3. Sales tax	15
4. Subsidy	5
5. Depreciation	20

[*Ans.* ₹ 90 *lakhs*] (*Delhi 2008*)

3. Calculate sales from the following data:

Items	₹ (*in lakhs*)
1. Net value added at factor cost	300
2. Intermediate consumption	200
3. Indirect tax	20
4. Depreciation	30
5. Change in stock	(–)50

[*Ans.* ₹ 600 *lakhs*] (*Delhi 2008*)

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4. Calculate Net Value Added at factor cost from the following data:

Items	₹ (*in lakhs*)
1. Depreciation	20
2. Intermediate cost	90
3. Subsidy	5
4. Sales	140
5. Exports	7
6. Change in stock	(–)10
7. Imports of raw materials	3

[*Ans.* ₹ 25 *lakhs*] (*AI 2008*)

5. Calculate Gross Value Added at market price from the following data:

Items	₹ (*in lakhs*)
1. Depreciation	15
2. Sales in the domestic market	250
3. Exports	50
4. Opening stock	20
5. Purchase of raw material	150
6. Closing stock	30
7. Import of raw material	25

[*Ans.* ₹ 160 *lakhs*] (*AI 2008*)

6. Calculate Gross Value Added at factor cost from the following data:

Items	₹ (*in lakhs*)
1. Sales tax	20
2. Sales	400
3. Purchase of raw material	250
4. Excise duty	30
5. Change in stock	(–)40
6. Import of raw material	12
7. Depreciation	9

[*Ans.* ₹ 60 *lakhs*] (*AI 2008*)

7. Calculate value of output from the following data:

Items	₹ (*in lakhs*)
1. Subsidies	10
2. Intermediate consumption	150
3. Net addition to stocks	(–)13
4. Depreciation	30
5. Excise duty	20
6. Net value added at factor cost	250

[*Ans.* ₹ 440 *lakhs*] (*Foreign 2008*)

8. Calculate sales from the following data:

Items	₹ (*in lakhs*)
1. Net value added at factor cost	300
2. Net addition to stocks	(–)20

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3. Sales tax	30
4. Depreciation	10
5. Intermediate consumption	100
6. Subsidy	5

[*Ans.* ₹ 455 *lakhs*] (*Foreign 2008*)

9. Calculate Net Value Added at factor cost from the following data:

Items	₹ (*in lakhs*)
1. Purchases of raw material	300
2. Import duty	20
3. Excise duty	30
4. Net addition to stocks	50
5. Value of output	500
6. Depreciation	10

[*Ans.* ₹ 140 *lakhs*] (*Foreign 2008*)

10. From the following information about firm '*X*', calculate Net Value Added at factor cost:

Items	₹ (*in lakhs*)
1. Purchase of raw material	500
2. Gross capital formation	200
3. Subsidies	60
4. Opening stock	50
5. Sales	800
6. Net capital formation	180
7. Closing stock	40

[*Ans.* ₹ 330 *lakhs*] (*Delhi 2008*)

11. From the following data calculate Net Value Added at factor cost:

Items	₹ (*in lakhs*)
1. Sales	500
2. Subsidies	30
3. Purchase of machine installed in the factory	400
4. Purchase of raw material	250
5. Change in stock	(–)20
6. Consumption of fixed capital	40

[*Ans.* ₹ 220 *lakhs*] (*Delhi 2008*)

12. Calculate Net Value Added at factor cost from the following data:

Items	₹ (*in lakhs*)
1. Sales	800
2. Purchase of machine for installation in the factory	500
3. Purchase of raw material	450

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4. Subsidies	50
5. Consumption of fixed capital	60
6. Wages and salaries	200
7. Change in stock	40

[*Ans.* ₹ 380 *lakhs*] (*AI 2008*)

13. Calculate net value added at factor cost from the following data:

Items	₹ (*in crores*)
1. Purchase of machinery to be used in the production unit	100
2. Sales	200
3. Intermediate costs	90
4. Indirect taxes	12
5. Change in stock	10
6. Excise duty	6
7. Stock of raw material	5

[*Ans.* ₹ 108 *crores*] (*Foreign 2009*)

14. From the following data relating to a firm, calculate its net value added at factor cost:

Items	₹ (*in lakhs*)
1. Subsidy	40
2. Sales	800
3. Depreciation	30
4. Exports	100
5. Closing stock	20
6. Opening stock	50
7. Intermediate purchases	500
8. Purchase of machinery for own use	200
9. Import of raw material	60

[*Ans.* ₹ 280 *lakhs*] (*Sample Paper 2009*)

15. Calculate gross fixed capital formation from the following data:

Items	₹ (*in crores*)
1. Private final consumption expenditure	1000
2. Government final consumption expenditure	500
3. Net exports	(–) 50
4. Net factor income from abroad	20
5. Gross domestic product at market price	2500
6. Opening stock	300
7. Closing stock	200

[*Ans.* ₹ 1150 *crores*] (*Sample Paper 2009*)

16. Calculate Gross Value Added at Factor Cost.

Items	
1. Units of output sold (units)	1,000
2. Price per unit of output (₹)	30
3. Depreciation (₹)	1,000

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4. Intermediate cost (₹)	12,000
5. Closing stock (₹)	3,000
6. Opening stock (₹)	2,000
7. Excise (₹)	2,500
8. Sales tax (₹)	3,500

[*Ans.* ₹ 13,000] (*Delhi 2012*)

17. Calculate Net Value Added at Factor Cost:

Items	
1. Consumption of fixed capital (₹)	600
2. Import duty (₹)	400
3. Output sold (units)	2,000
4. Price per unit of output (₹)	10
5. Net change in stock (₹)	(–) 50
6. Intermediate cost (₹)	10,000
7. Subsidy (₹)	500

[*Ans.* ₹ 9,450] (*Delhi 2012*)

18. Find Net Value Added at Market Price:

Items	
1. Output sold (units)	800
2. Price per unit of output (₹)	20
3. Excise (₹)	1,600
4. Import duty (₹)	400
5. Net change in stocks (₹)	(–) 500
6. Depreciation (₹)	1,000
7. Intermediate Cost (₹)	8,000

[*Ans.* ₹ 6,500] (*Delhi 2012*)

19. Find Net Value Added at Factor Cost:

Items	
1. Intermediate costs (₹)	15,000
2. Output sold (units)	9,000
3. Price per unit of output (₹)	4
4. Consumption of fixed capital (₹)	2,000
5. Excise duty (₹)	4,000
6. Change in stock (₹)	(–) 1,000

[*Ans.* ₹ 14,000] (*Foreign 2012*)

20. Find Gross Value Added at Factor Cost:

Items	
1. Import duty (₹)	1,000
2. Excise (₹)	2,000

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3. Output sold (units)	6,000
4. Price per unit of output (₹)	6
5. Change in stock (₹)	600
6. Intermediate cost (₹)	16,000
7. Subsidy (₹)	500

[*Ans.* ₹ 18,100] (*Foreign 2012*)

21. Calculate "sales" from the following data:

	(₹ *in lakhs*)
1. Net value added at factor cost	560
2. Depreciation	60
3. Change in stock	(–)30
4. Intermediate cost	1000
5. Exports	200
6. Indirect taxes	60

[Ans. ₹ 1710 lakhs] (*Delhi 2013*)

22. Calculate "Sales" from the following data:

	(₹ *in lakhs*)
1. Intermediate costs	700
2. Consumption of fixed capital	80
3. Change in stock	(–) 50
4. Subsidy	60
5. Net value added at factor cost	1300
6. Exports	50

[Ans. ₹ 2070 lakhs] (*Delhi 2013*)

Long Answer Type Questions **(*6 Marks*)**

1. Calculate *NI* by (*a*) Income Method and (*b*) Expenditure Method:

Items	₹ (*in crores*)
1. Private final consumption expenditure	240
2. Mixed income of self-employed	500
3. Gross domestic fixed capital formation	600
4. Opening stock	40
5. Compensation of employees	400
6. Closing stock	60
7. Government final consumption expenditure	150
8. Operating surplus	100
9. Consumption of fixed capital	25
10. Net indirect taxes	35
11. Net factor income from abroad	50

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12.	Exports	100
13.	Imports	50

[*Ans.* ₹ 1050 *crores*]

2. From the data, calculate (*a*) *NI* by Income Method and (*b*) *NI* by Expenditure Method:

	Items	₹ (*in crores*)
1.	Govt. final consumption expenditure	790
2.	Indirect taxes	880
3.	Gross fixed capital formation	1,330
4.	Mixed income of the self-employed	2,930
5.	Subsidies	110
6.	Change in stock	320
7.	Rent, interest and profit	960
8.	Consumption of fixed capital	410
9.	Private final consumption expenditure	5,220
10.	Import of goods and services	570
11.	Export of goods and services	480
12.	Net factor income from abroad	(–)50
13.	Compensation of employees	2,500

[*Ans.* ₹ 6340 *crores*]

3. Calculate National Income by (*a*) Income Method and (*b*) Expenditure Method:

	Items	₹ (*in crores*)
1.	Wages and salaries	500
2.	Government final consumption expenditure	120
3.	Royalty	20
4.	Interest	40
5.	Households final consumption expenditure	600
6.	Change in stock	10
7.	Indirect tax	100
8.	Rent	50
9.	Final consumption expenditure of private non-profit institutions serving households	30
10.	Net domestic fixed capital formation	60
11.	Profit after tax	100
12.	Corporation tax	20
13.	Net exports	(–)20
14.	Subsidies	30
15.	Net factor income from abroad	(–)5

[*Ans.* ₹ 725 *crores*]

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4. Calculate (*a*) Net Domestic Product at market price, and (*b*) Net National Product at factor cost from the following data:

Items	₹ (*in crores*)
1. Subsidies	25
2. Depreciation	50
3. Net exports	(–)15
4. Net change in stock	20
5. Indirect taxes	60
6. Net factor income from abroad	(–)5
7. Private final consumption expenditure	300
8. Government final consumption expenditure	60
9. Gross domestic capital formation	125

[*Ans.* (*a*) ₹ 420 *crores;* (*b*) ₹ 380 *crores*]

5. Calculate Net Domestic Product at factor cost from the following data:

Items	₹ (*in crores*)
1. Value of output	500
2. Consumption of fixed capital	20
3. Value of intermediate consumption	200
4. Net indirect taxes	20

[*Ans.* ₹ 260 *crores*]

6. Determine the value of National Income from the following data:

Items	₹ (*in crores*)
1. Value of sales	21,000
2. Change in stock	9,000
3. Depreciation	2,000
4. Wages	7,000
5. Compensation of employees in kind	3,000
6. Profits	3,000
7. Interest	1,000
8. Rent	1,000

[*Ans.* ₹ 15000 *crores*]

7. Calculate National Income (NNP_{FC}) by Income and Expenditure Methods.

Items	₹ (*in crores*)
1. Compensation of employees	250
2. Imports	20
3. Mixed income	50
4. Gross fixed capital formation	120
5. Private final consumption expenditure	550
6. Consumption of fixed capital	10
7. Net factor income from abroad	20

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8.	Indirect taxes	100
9.	Change in stock	20
10.	Subsidies	20
11.	Operating surplus	350
12.	Exports	10
13.	Government final consumption expenditure	60

[*Ans.* ₹ 670 *crores*]

8. Calculate (*i*) Gross Value Added at Market Price by the primary, secondary, and the tertiary sector and (*ii*) National Income.

	Items	₹ (*in crores*)
1.	Value of output of primary sector	800
2.	Value of output of secondary sector	200
3.	Value of output of tertiary sector	300
4.	Value of intermediate inputs purchased by primary sector	400
5.	Value of intermediate inputs purchased by secondary sector	100
6.	Value of intermediate inputs purchased by tertiary sector	50
7.	Indirect taxes paid by all sectors	50
8.	Consumption of fixed capital of all sectors	80
9.	Factor income from rest of the world	10
10.	Factor income paid to non-residents	20
11.	Subsidies received by all sectors	20

[*Ans.* (*i*) (*a*) ₹ 400 *crores*; (*b*) ₹ 100 *crores*; (*c*) ₹ 250 *crores*; (*ii*) ₹ 630 *crores*]

9. Estimate National Income from the following data:

	Items	₹ (*in crores*)
1.	Opening stock	50
2.	Closing stock	60
3.	Consumption of fixed capital	10
4.	Private final consumption expenditure	500
5.	Net exports	(–)5
6.	Net factor income from abroad	(–)10
7.	Compensation of employees paid by general Government	100
8.	Direct purchases of non-durable goods from abroad by general government	10
9.	Net purchase of goods and services by general govt. in domestic market	100
10.	Net capital formation	60
11.	Net indirect taxes	50

[*Ans.* ₹ 605 *crores*]

10. Calculate National Income by Income Method:

	Items	₹ (*in crores*)
1.	Salaries and wages	1,997

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2.	Transfer payment by Govt.	25
3.	Rent	132
4.	Indirect taxes	200
5.	Subsidies	89
6.	Compensation of workers in kind	95
7.	Depreciation	81
8.	Net income increase in assets abroad	52
9.	Interest	92
10.	Gross expenditure on goods and services	574
11.	Personal expend. on consumer goods and services	1,805
12.	Corporate profit tax	10
13.	Income of the self-employed	264
14.	Undistributed corporate profit	26
15.	Dividends	201
16.	Social security contributions by employers	54
17.	Gross investment	107

[*Ans.* ₹ 2923 *crores*]

11. Calculate (*i*) *GNP* at Market Price and (*ii*) *NNP* at Factor Cost using Expenditure Method:

Items	₹ (*in crores*)
1. Private final consumption expend.	1,000
2. Private fixed investment (gross)	500
3. Change in inventories	400
4. Govt. consumption expend.	300
5. Govt. fixed investment	200
6. Consumption of pvt. fixed capital	100
7. Consumption of govt. fixed capital (gross)	50
8. Indirect taxes	200
9. Economic subsidies	150
10. Net exports	100
11. Net factor income from abroad	(–)50

[*Ans.* (*i*) ₹ 2450 *crores*; (*ii*) ₹ 2250 *crores*]

12. Calculate: (*i*) *NI* by income method, (*ii*) *NI* by Expenditure Method.

Items	₹ (*in crores*)
1. Wages and salaries	3,065
2. Interest	700
3. Compensation of employees in kind	65
4. Rent	400
5. Undistributed profits	110
6. Dividends	240

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7.	Net Income from abroad	110
8.	Social security contribution by employers	60
9.	Direct taxes of firms	150
10.	Private consumption	2,000
11.	Public consumption	1,200
12.	Gross domestic investment	1,500
13.	Net investment abroad	270
14.	Net indirect taxes	100
15.	Depreciation	80
16.	Transfer payment	130
17.	Direct personal taxes	75

[*Ans.* ₹ 4900 *crores*]

13. Calculate NNP_{FC} by Expenditure Method:

Items	₹ (*in crores*)
1. Expenditure by households	400
2. Expenditure by govt.	100
3. Gross domestic capital formation	110
4. Change in stock	(–)10
5. Depreciation	40
6. Net indirect taxes	10
7. Exports	160
8. Imports	110
9. Net factor income from abroad	nil

[*Ans.* ₹ 610 *crores*]

14. Calculate "gross national product at factor cost" from the following data by (*i*) income method, and (*ii*) expenditure method:

Items	₹ (*in crores*)
1. Private final consumption expenditure	1000
2. Net domestic capital formation	200
3. Profits	400
4. Compensation of employees	800
5. Rent	250
6. Government final consumption expenditure	500
7. Consumption of fixed capital	60
8. Interest	150
9. Net current transfers from rest of the world	(–) 80
10. Net factor income from abroad	(–) 10
11. Net exports	(–) 20
12. Net indirect taxes	80

[*Ans.* ₹ 1650 *crores*] (*Delhi 2009*)

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15. From the following data, calculate "national income" by (*a*) income method and (*b*) expenditure method:

Items	₹ (*in crores*)
1. Interest	150
2. Rent	250
3. Government final consumption expenditure	600
4. Private final consumption expenditure	1200
5. Profits	640
6. Compensation of employees	1000
7. Net factor income **to** abroad	30
8. Net indirect taxes	60
9. Net exports	(–) 40
10. Consumption of fixed capital	50
11. Net domestic capital formation	340

[*Ans.* ₹ 2010 *crores*] (*AI 2009*)

16. From the following data, calculate National Income by Income and Expenditure method:

Items	₹ (*in crores*)
1. Government final consumption expenditure	100
2. Subsidies	10
3. Rent	200
4. Wages and Salaries	600
5. Indirect tax	60
6. Private final consumption expenditure	800
7. Gross domestic capital formation	120
8. Social security contributions by employers	55
9. Royalty	25
10. Net factor income paid **to** abroad	30
11. Interest	20
12. Consumption of fixed capital	10
13. Profit	130
14. Net exports	70
15. Change in stock	50

[*Ans.* ₹ 1,000 *crores*] (*Sample Paper 2009*)

17. There are only two producing sectors *A* and *B* in an economy. Calculate (*a*) Gross value added at market price by each sector, (*b*) National income.

Items	₹ (*in crores*)
1. Net factor income from abroad	20
2. Sales by *A*	1000
3. Sales by *B*	2000
4. Change in Stock of *B*	(–) 200
5. Closing stock of *A*	50

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6.	Opening Stock of *A*	100
7.	Consumption of fixed capital by *A* and *B*	180
8.	Indirect taxes paid by *A* and *B*	120
9.	Purchases of raw materials, etc. by *A*	500
10.	Purchases of raw materials, etc. by *B*	600
11.	Exports by *B*	70

[*Ans.* (*a*) *A* = ₹ 450 *crores*, *B* = ₹ 1270 *crores;* (*b*) ₹ 1440 *crores*] (*Delhi 2009*)

18. Calculate (*a*) Gross domestic product at market price and (*b*) Factor income from abroad from the following data: (*AI 2010*)

	Items	₹ (*in crores*)
1.	Profits	500
2.	Exports	40
3.	Compensation of employees	1,500
4.	Gross national product at factor cost	2,800
5.	Net current transfer from rest of the world	90
6.	Rent	300
7.	Interest	400
8.	Factor income to abroad	120
9.	Net indirect taxes	250
10.	Net domestic capital formation	650
11.	Gross fixed capital formation	700
12.	Change in stock	50

[*Ans.* (*a*) ₹ 3,050 *crores*; (*b*) ₹ 120 *crores*]

19. Calculate (*a*) Gross domestic product at factor cost, and (*b*) Factor income to abroad, from the following data: (*Foreign 2010*)

	Items	₹ (*in crores*)
1.	Gross national product at factor cost	3,750
2.	Compensation of employees	2,000
3.	Net exports	(–) 50
4.	Profit	700
5.	Net domestic capital formation	1,000
6.	Opening stock	150
7.	Closing stock	200
8.	Gross fixed capital formation	1,050
9.	Interest	600
10.	Rent	400
11.	Factor income from abroad	20

[*Ans.* (*a*) ₹ 3,800 *crores*; (*b*) ₹ 70 *crores*]

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20. Calculate Gross National Product at Factor Cost by (*a*) Income method and (*b*) Expenditure method, from the following data:

Items	₹ (*in crores*)
1. Private final consumption expenditure	800
2. Government final consumption expenditure	300
3. Compensation of employees	600
4. Net imports	50
5. Gross domestic capital formation	150
6. Consumption of fixed capital	20
7. Net indirect taxes	100
8. Net factor income from abroad	(–) 70
9. Dividend	150
10. Rent	120
11. Interest	80
12. Undistributed profits	80
13. Social security contributions by employers	60
14. Corporate tax	50

[*Ans.* ₹ 1030 *crores*] (*Delhi 2012*)

21. From the following data calculate Gross National Product at Factor Cost by (*a*) Income method and (*b*) Expenditure method.

Items	₹ (*in crores*)
1. Government final consumption expenditure	200
2. Private final consumption expenditure	400
3. Profits	160
4. Net indirect taxes	60
5. Rent	70
6. Interest	50
7. Compensation of employees	300
8. Exports	65
9. Imports	95
10. Gross domestic capital formation	80
11. Consumption of fixed capital	10
12. Net factor income to abroad	50

[*Ans.* ₹ 540 *crores*] (*AI 2012*)

22. Calculate National Income by (*a*) Income method and (*b*) Expenditure method from the following data:

Items	₹ (*in crores*)
1. Government final consumption expenditure	2000
2. Net domestic capital formation	600

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3. Consumption of fixed capital	70
4. Net exports	60
5. Net indirect taxes	200
6. Private final consumption expenditure	4000
7. Net factor income to abroad	60
8. Compensation of employees	3660
9. Profits	1500
10. Rent	500
11. Interest	800
12. Dividend	300

[*Ans.* ₹ 6400 *crores*] (*AI 2012*)

23. Calculate National Income from the following data :

	(₹ *in crores*)
1. Private final consumption expenditure	900
2. Profit	100
3. Government final consumption expenditure	400
4. Net indirect taxes	100
5. Gross domestic capital formation	250
6. Change in stock	50
7. Net factor income from abroad	(–)40
8. Consumption of fixed capital	20
9. Net imports	30

[Ans. ₹ 1360 crores] (*Delhi 2013*)

24. Calculate "Gross National Product at Market Price" from the following data :

	(₹ *in crores*)
1. Compensation of employees	2000
2. Interest	500
3. Rent	700
4. Profits	800
5. Employer's contribution to social security schemes	200
6. Dividends	300
7. Consumption of fixed capital	100
8. Net indirect taxes	250
9. Net exports	70
10. Net factor income to abroad	150
11. Mixed income of self-employed	1,500

[Ans. ₹ 5700 crores] (*AI 2013*)

25. Calculate 'National Income' from the following data :

	(₹ *in crores*)
1. Net exports	(–) 300
2. Compensation of employees	6000
3. Rent	400
4. Dividend	200

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5.	Consumption of fixed capital	300
6.	Change in stock	50
7.	Profits	800
8.	Net factor income to abroad	(–)80
9.	Net indirect taxes	600
10.	Interest	500

[Ans. ₹ 7780 crores] (*Foreign 2013*)

Answers

Multiple Choice Questions

1. (*d*) **2.** (*d*) **3.** (*a*) **4.** (*c*) **5.** (*b*) **6.** (*d*) **7.** (*d*)

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Related Aggregates of National Income and Disposable Income



Chapter Scheme

3.1 Related Aggregates
3.2 Factor Income From Net Domestic Product Accruing to Private Sector
3.3 Private Income
- 3.3.1 Meaning and Measurement of Private Income
- 3.3.2 Difference Between:
  - (*a*) *NI* and Private Income
  - (*b*) Income from Domestic Product Accruing to Private Sector and Private Income

3.4 Personal Income
- 3.4.1 Meaning and Measurement of Personal Income
- 3.4.2 Difference Between:
  - (*a*) Private Income and Personal Income
  - (*b*) Personal Income and National Income

3.5 Disposable Income
- 3.5.1 Meaning and Measurement of Disposable Income
- 3.5.2 Difference Between Personal Income and Disposable Income
- 3.5.3 National Disposable Income (Gross and Net)

3.6 Real and Nominal GDP
- 3.6.1 Real *GDP*
- 3.6.2 Nominal *GDP*
- 3.6.3 Advantage of Real *GDP*
- 3.6.4 Difference Between Real and Nominal *GDP*
- 3.6.5 Conversion of *GDP* at Current Prices into *GDP* at Constant Prices
- 3.6.6 The *GDP* Deflator
- 3.6.7 Green *GNP*

3.7 GDP–A Poor Measure of Economic Welfare
3.8 Formulae of Related Aggregates of NI and Disposable Income
- **Points to Remember**
- **Test Your Knowledge**
- **Answers to MCQs**

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3.1 RELATED AGGREGATES

NDP_{FC} or domestic factor income is generated in two sectors: **Private sector** and **public or government sector.** Income from domestic product going to **government sector** has two components:

(*a*) Income from property and entrepreneurship to government.

(*b*) Savings of non-departmental government enterprises.

Income from net domestic product (*NDP*) going to **private sector** has three components:

(*a*) Compensation of employees.

(*b*) Operating surplus.

(*c*) Mixed income of self-employed.

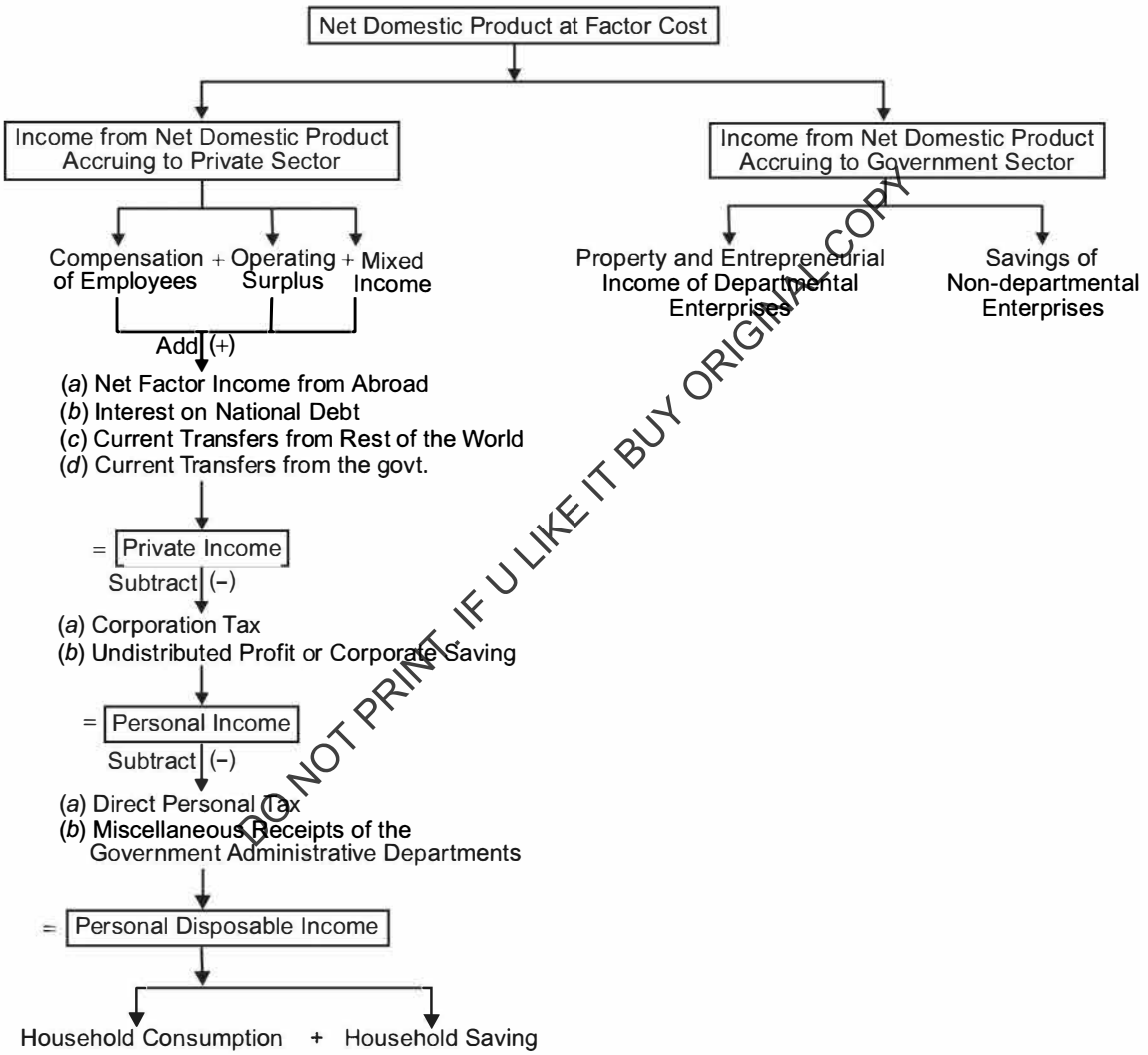
If *NFIA* and interest on national debt and current transfer are added to income from

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NDP going to private sector, **Private Income** is obtained. If corporation tax and undistributed profits are deducted from private income, **Personal Income** is obtained. If direct personal tax and miscellaneous receipts of the government administrative departments are deducted from personal income, **Personal Disposable Income** is obtained. These are the four related aggregates of *NI*.

Fig. 3.1 graphically shows how related aggregates are calculated from one another.



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Fig. 3.1

3.2 FACTOR INCOME FROM NET DOMESTIC PRODUCT ACCRUING TO PRIVATE SECTOR

Meaning and Measurement of Income from *NDP* Accruing to Private Sector

Income from net domestic product accruing to private sector is that part of net domestic product at factor cost which is generated in the form of compensation of employees, operating surplus and mixed income.

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It is calculated by the formula:

Factor Income from Domestic Product accruing to the Private Sector or NDP_{FC} accruing to Private Sector

= Net domestic product at factor cost − Income from property and entrepreneurship accruing to the government departmental enterprises − Savings of non-departmental enterprises.

3.3 PRIVATE INCOME

3.3.1 Meaning and Measurement of Private Income

According to **Central Statistical Organisation, private income is the total of income factor from all sources and current transfers from the government and rest of the world accruing to private sector.**

In other words, *Private income is the income which goes to the private sector from all sources.* It is the income from all sources whether earned (*i.e.*, income payments) or unearned (*i.e.*, transfer payments). It is the sum total of factor incomes and transfer incomes received by private sector. It also includes net factor income from abroad and interest on national debt. In short, private income is the income of all private enterprises and households in the private sector from whatever source, earned or unearned.

Private Income can be measured by the formulae:

Private Income = Income from Net domestic product accruing to the private sector + Net factor income from abroad + Net transfer payments from the government + Transfer payments from the rest of the world + Interest on national debt ...(1)

= NDP_{FC} − Income from domestic product accruing to public sector + Current transfer + *NFIA* ...(2)

= NDP_{FC} accruing to the private sector + *NFIA* + National Debt Interest + Current Transfer from govt. administrative department + Net Current Transfer from rest of the world. ...(3)

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Note. **National Debt Interest**

'National Debt Interest' is the interest paid by government on loans taken to meet its administrative expenditure and consumption expenditure. Since interest on loans taken to meet consumption expenditure is not a factor income it is not included in NDP_{FC}. But since it is a disposable income it is added to NDP_{FC} to arrive at disposable income of which private income is a part.

3.3.2 Difference Between:

(*a*) National Income and Private Income

Table 3.1 summarises the difference between *NI* and Private Income.

Table 3.1 **Difference at a Glance**

National Income	Private Income
1. National Income includes only factor incomes earned.	1. Private income includes factor incomes and transfer payments.

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2. It includes income generated both in the private and public sectors.	2. It includes all types of income received by households and private enterprises in the private sector.
3. It is the income of normal residents of a country.	3. It is the income of the private sector from all sources.
4. Interest on national debt is not included in it.	4. Interest on national debt is included in it.
5. National Income = Net domestic factor income + Net factor income from abroad.	5. Private Income = Net domestic factor income (NDP_{FC}) – Income from the domestic product accruing to public sector + All current transfer incomes + Net factor income from abroad + Interest on national debt.

(*b*) Income from Domestic Product Accruing to Private Sector and Private Income

Table 3.2 summarises the difference between them.

Table 3.2 **Difference at a Glance**

Income from Domestic Product Accruing to Private Sector	Private Income
1. It is defined as that part of domestic income that is generated in the private sector.	1. It is defined as the income of the private sector from all sources.
2. It includes only factor incomes.	2. It includes factor incomes as well as transfer income.
3. It is a domestic concept as it does not include income from abroad.	3. It is a national concept as it includes net income from abroad.
4. Income from domestic product accruing to the private sector = NDP_{FC} – Income from domestic product accruing to the public sector.	4. Private income = income from domestic product accruing to private sector + All current transfer incomes + *NFIA* + Interest on national debt.
5. Interest on national debt is not included in it.	5. Interest on national debt is included in it.

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3.4 PERSONAL INCOME

3.4.1 Meaning and Measurement of Personal Income

Personal income is the sum total of income actually received by a person from all sources in the form of current transfer payments and factor incomes. It is a receipt concept. Personal income includes factor income as well as transfer income. Corporate Saving and Corporation Tax are not a part of personal income. Personal income does not include income of corporations and companies.

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Personal income is calculated by the formula:

Personal Income = Private Income − Corporation tax − Corporate saving or undistributed profit (less: net retained earnings of foreign companies)...(1)

= National Income − Income from domestic product accruing to public sector − Corporation tax − Undistributed profit less of net retained earnings of foreign companies + Transfer incomes ...(2)

3.4.2 Difference Between:

(*a*) Private Income and Personal Income

Table 3.3 gives the difference between Private and Personal Income.

Table 3.3 **Difference at a Glance**

Private Income	Personal Income
1. It is a broader concept which relates to total income of both private enterprise and household.	1. It is a narrow concept which relates to income received by a household or individual.
2. It includes corporation tax and undistributed profit.	2. It does not include corporation tax and undistributed profit.

If corporate profit tax + corporation saving = 0,
then private income = personal income

(*b*) Personal Income and National Income

Table 3.4 summarises the difference between Personal Income and National Income.

Table 3.4 **Difference at a Glance**

Personal Income	National Income
1. It relates to receipt of Income.	1. It relates to generation of Income. It is an earning concept.
2. It includes factor incomes and transfer income.	2. It includes only factor incomes.
3. Interest on national debt is included in it.	3. Interest on national debt is not included in it.
4. Corporation tax and corporate savings are not included.	4. Corporation tax and corporate savings are included in it.
5. Income from domestic product accruing to the government sector is not included in it.	5. Income from domestic product accruing to the government sector is included in it.

3.5 DISPOSABLE INCOME

3.5.1 Meaning and Measurement of Disposable Income

Disposable income is defined as the income remaining with individuals after deduction of all taxes levied against their income and their property by the government.

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Disposable Income is income actually at the disposal of households. They can either spend it or save it. It is calculated by deducting direct taxes and miscellaneous fees, fines, etc. paid by the individual from their income. The formula for calculating it is as follows:

Disposable Income= Personal Income − Direct personal taxes (Income tax and Property tax) − Miscellaneous receipts of the government administrative department (fees, fines, etc.)

= Saving + Consumption

3.5.2 Difference Between Personal Income and Disposable Income

Table 3.5 summarises the difference.

Table 3.5 **Difference at a Glance**

Personal Income	Disposable Income
1. It is a broader concept which includes all income actually received by persons from all sources.	1. It is a narrow concept which refers to personal income remaining with persons after deducting direct taxes and other fees and fines.
2. It includes direct taxes.	2. It excludes direct taxes.

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3.5.3 National Disposable Income (Gross and Net)

National disposable income is defined as the maximum the country can afford to spend on consumption goods or services during an accounting year without having to finance its expenditure by disposing of assets or by increasing its liabilities. It is the income of the residents of a country net of current transfers. It is the income from all sources, connected with production or otherwise. It is a measure of what is available to the residents of a nation for spending on consumption and for saving during a year.

National Disposable Income can be 'gross' or 'net'.

Gross National Disposable Income or *GNDI* = GNP_{MP} + Net current transfers from the rest of the world

or

= Final consumption expenditure + Gross saving

Net National Disposable Income or *NNDI* = NNP_{MP} + Net current transfers received from the rest of the world

= Final consumption expenditure + Net saving

= National Income + Net indirect taxes + Net current transfers from rest of the world

= *GNDI* − consumption of fixed capital.

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3.6 REAL AND NOMINAL *GDP*

3.6.1 Real *GDP*

Real *GDP* or *GDP* at constant prices is a very useful index to measure the real or actual growth of an economy. It is defined as *the value of current output at some base year prices*. It is obtained by multiplying the goods and services produced in the current year with the prices prevailing in the base or constant year. *GDP* at constant prices is also called *real GDP*. Base year or constant year is a stable year. It is carefully selected as one in which there were no natural calamities like floods, earthquakes, drought, epidemic or wars. The prices remain stable throughout the year. At present the base year in India is 1999–2000. Each year every country calculates *GDP* at constant prices. To estimate *GDP* in 2005–2006 at constant (1999–2000) prices, multiply the values of all the final goods and services produced in the current year (2005–2006) with prices prevailing in 1999–2000.

This estimate is a reliable index of economic growth of a country. *GDP* at constant prices will increase only when there is rise in the output of goods and services in country during a year. In other words, if output of final goods and services rises in a particular year and prices are taken to be constant as given by constant year, *GDP* at constant prices will rise. It *implies economic growth*. A high rate of economic growth improves the standard of living of people.

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3.6.2 Nominal *GDP*

Nominal *GDP* or *GDP* at current prices is a poor index to measure the economic growth of an economy. It is defined as the value of current output at current year prices. It is obtained by multiplying the goods and services produced in the current year with the prices prevailing in the current year. *GDP* at current prices is also called *monetary GDP*. Each year every country calculates *GDP* at current prices. To estimate *GDP* in 2005–2006 at current prices (2005–2006), multiply the values of all the final goods and services produced in 2005–2006 with the prices prevailing in 2005–2006.

This estimate gives only the money value of *GDP*. If current prices increase this inflationary, *GDP* at current prices will also become inflated. If the output of final goods and services produced in current year remains the same and current prices rise, then *GDP* at current prices will increase. It is important to note that rise in *GDP* at current prices does not imply economic growth of an economy.

3.6.3 Advantage of Real *GDP*

The advantages are:

1. It is useful in determining the effect of increased production on the real development of the economy.
2. It helps to make yearly comparison of the changes in the growth of output of goods and services.
3. It is useful in making international comparisons of economic performance.

3.6.4 Difference Between Real and Nominal *GDP*

The difference between national income at constant and current prices can be summarised in Table 3.6.

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Table 3.6. **Difference between National Income at Constant and Current Prices**

GDP at Constant Prices	*GDP* at Current Prices
1. It is the value of current output at base year prices.	1. It is the value of current output at current year prices.
2. It is also called Real *GDP*.	2. It is also called Nominal *GDP*.
3. It can increase only when output of goods and services rise in the current year.	3. It can rise either when output of goods and services rise or when current prices rise.
4. It is a reliable index of economic growth, *i.e.*, more *GDP* at constant prices implies more economic growth.	4. It is not a reliable index of economic growth, *i.e.*, there is no confirmed relationship between *GDP* at current prices and economic growth.

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3.6.5 Conversion of *GDP* at Current Prices into *GDP* at Constant Prices

The *GDP* at current prices includes changes in price to neutralise the effect of changes in price, *GDP* at current prices is converted into *GDP* at constant prices. The *formula* for conversion is:

$$\textbf{GDP at Constant Prices} = \frac{\textbf{GDP at Current Prices}}{\textbf{Price Index for the Current Year}} \times \textbf{Base Year}$$

where Base Year = Price index of base year is always taken to be 100.

Numerical Examples.

Convert nominal *GDP* into real *GDP* prices.

(*a*) *GDP* at current year prices is ₹ 1,50,000 and price index for the current year is ₹ 150.

Solution.

$$\textit{GDP} \text{ at constant prices} = \frac{1,50,000}{150} \times 100$$
$$= ₹\ 1,00,000$$

(*b*) *GDP* at current year prices is ₹ 3,00,000 and current year price index is ₹ 300.

Solution.

$$\textit{GDP} \text{ at constant prices} = \frac{3,00,000}{300} \times 100$$
$$= ₹\ 1,00,000$$

3.6.6 The *GDP* Deflator

It measures the average level of prices of all goods and services that make *GDP*. It is calculated by the formula:

$$\textbf{GDP Deflator} = \frac{\textbf{Nominal } \textit{GDP}}{\textbf{Real } \textit{GDP}} \times 100$$

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3.6.7 Green *GNP*

Green *GNP* is defined as, **"*GNP* which would help to attain a sustainable use of natural environment and equitable distribution of benefits of development."** This concept is used to denote sustainable economic development, *i.e.,* development which should not cause environmental degradation (pollution) and depletion of resources and at the same time promote economic welfare for a long period of time.

3.7 *GDP*—A POOR MEASURE OF ECONOMIC WELFARE

When an economy experiences an increase in *GDP* in real terms, it is said that **economic growth** has taken place and economy has become prosperous. When an economy experiences rise in **welfare** it implies **social growth**. The basic questions to be answered are:

Is there a conflict between economic growth (or *GDP*) and economic welfare? Does economic growth imply welfare? A rise in *GDP* may not bring about economic welfare of an economy. This is so because economic welfare of the masses, among other factors, depends upon (*i*) composition of *GDP* and (*ii*) distribution of *GDP* among people. *GDP* is important but **not a perfect measure** of a country's economic well-being.

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Limitations of taking GDP as an index of welfare are:

1. Ignores Resources of Country

(*i*) The *GDP* figures give no indication of the **population, skill and resources** of the country. A country may be having a high *GDP* but it may be consumed by the increasing population, so that the level of people's well-being (welfare) remains low.

(*ii*) Similarly, a high *GDP* may be due to *greater area* of the country or due to the **concentration of some resources** in one particular country. A typical example of the latter is the Arab states who have a high *GDP* due to their oil resources but mass of people is one of the most backward in the world.

2. Ignores Prices

GDP does not consider the **level of prices** in the country. People may be having high incomes but due to the high prices they might not be able to enjoy a high standard of living.

3. Ignores Distribution of *GDP*

High *GDP* of a country may be due to large contribution made by **few industrialists.** While these exceptional few cases enjoy high standard of living, the level of economic well-being of the people may be indeed low. Thus, if a small section of the population owns a large share in the *GDP* leaving a smaller percentage of the *GDP* to be shared by a greater number of people, economic growth will not reach the poorest of the poor sections of an economy.

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4. Ignores Non-Monetary Changes

Another factor not taken into account by *GDP* is the **level of unemployment** in the country. People cannot be said to be enjoying a high standard of living if the level of unemployment is high. Economic well-being of the people will remain low unless unemployment is removed.

5. Ignores Composition of *GDP*

GDP does not show the **composition of output.** If product mix has more of war goods like explosives, guns, bombs, then destruction will increase and welfare will reduce. Similarly, increase in the *GDP* may be purely due to an increase in the goods which are not socially desirable such as drugs like, smack, brown sugar, etc. This will, surely not enhance economic welfare of the people. Moreover, if the share of wage goods in *GDP* does not increase, economic growth will not lead to economic welfare of the masses.

6. Ignores Externalities

With rise in *GDP* or economic activity, there will be rise in industrialisation and urbanisation. This will raise pollution of air, water and noise. There will be more accidents, shortage of water, housing problems, etc. In other words, with rise in *GDP* there will be **ecological degradation** *or* **negative externalities** which will reduce welfare of the people.

[**Note:** See value based questions on externalities asked in 2014 Question Paper alongwith their answers on page No. 3.35]

Thus, we conclude that a rise in *GDP* does not bring about a corresponding rise in economic welfare.

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Illustration 1. Calculate (*a*) Private Income (*b*) Personal Income (*c*) Personal Disposable Income.

	Items	₹ (*in crores*)
1.	NDP_{FC}	300
2.	Income from property and entrepreneurship to government administrative departments	60
3.	*NFIA*	10
4.	Savings of non-departmental government enterprises	40
5.	Depreciation	15
6.	Current transfer income	20
7.	Corporation taxes	30
8.	Undistributed profit (*less* net retained earnings of foreign companies)	50
9.	Personal taxes	25
10.	Miscellaneous receipts of the government	35

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Solution.

(*a*) Private Income = NDP_{FC} – Income from domestic products accruing to public sector + current transfers + *NFIA*
= 300 – [60 + 40] + 20 + 10
= 300 – 100 + 20 + 10
= ₹ 230 crores.

(*b*) Personal Income = Private income – Corporation taxes – Undistributed profits *Less* net retained earnings of foreign companies
= 230 – 30 – 50 = ₹ 150 crores.

(*c*) Personal Disposable Income = Personal income – Personal taxes Miscellaneous receipts of the government
= 150 – 25 – 35 = ₹ 90 crores.

Illustration 2. Calculate (*a*) Gross National Disposable Income (*b*) Net National Disposable Income.

Items	₹ (*in crores*)
1. National income	1,200
2. *NFIA*	200
3. Net current transfer from ROW	400
4. Depreciation	60
5. Net indirect taxes	30

Solution.

(*a*) Gross National Disposable Income = GNP_{MP} + Net current transfers from ROW
= (NNP_{FC} + Depreciation + Net indirect taxes) + Net current transfers from ROW
= 1,200 + 60 + 30 + 400
= ₹ 1,690 crores.

(*b*) Net National Disposable Income = NNP_{MP} + Net current transfers from ROW
= (NNP_{FC} + Net indirect taxes) + Net current transfers from ROW
= 1,200 + 30 + 400
= ₹ 1,630 crores.

Illustration 3. Calculate (*a*) Gross National Disposable Income (*b*) Net National Disposable Income.

Items	₹ (*in crores*)
1. Gross national product at factor cost	700
2. Net current transfers from ROW	50

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3. Net indirect taxes	70
4. Consumption of fixed capital	60
5. Net factor income from abroad	(–) 10

Solution.

(*a*) Gross National Disposable Income = GNP_{FC} + Net indirect taxes + Net current transfers from ROW
= 700 + 70 + 50
= ₹ 820 crores

(*b*) Net National Disposable Income = Gross National Disposable Income − Consumption of fixed capital
= 820 − 60 = ₹ 760 crores.

Illustration 4. Calculate (*a*) Personal Income (*b*) Private Income.

Items	₹ (*in crores*)
1. National debt interest	20
2. Personal disposable income	150
3. Personal taxes	50
4. Corporate profit Tax	25
5. Retained earnings of private corporations	5

Solution.

(*a*) Personal Income = Personal disposable income + Personal taxes
= 150 + 50 = ₹ 200 crores

(*b*) Private Income = Personal income + corporate profit tax + Retained earnings of private corporation
= 200 + 25 + 5 = ₹ 230 crores.

Illustration 5. Calculate (*a*) Personal Income (*b*) Private Income.

Items	₹ (*in crores*)
1. Retained earnings of private corporations	10
2. Miscellaneous receipts of govt. admins. dept.	50
3. Personal disposable income	180
4. Personal tax	30
5. Corporate profit tax	10

Solution.

(*a*) Personal Income = Personal disposable income + Personal taxes + Misc. receipts of govt. admins. deptt.
= 180 + 30 + 50 = ₹ 260 crores

(*b*) Private Income = Personal income + Retained earnings of private corporation + Corporate profit tax
= 260 + 10 + 10 = ₹ 280 crores.

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Illustration 6. Calculate (*a*) Personal Income (*b*) Personal Disposable Income.

Items	₹ (*in crores*)
1. Private income	2000
2. Net retained earnings of private enterprises	600
3. Direct taxes paid by households	200
4. Corporation tax	350
5. National debt interest	250

Solution.

(*a*) Personal Income = Private income − Net retained earnings of private interest entreprises − corporation tax

= 2000 − 600 − 350 = ₹ 1050 crores.

(*b*) Private Disposable Income = Personal income + Retained earnings of private corporation + Corporate profit tax

= 1050 − 200

= ₹ 850 crores.

Illustration 7. Calculate (*a*) Net National Disposable Income (*b*) Gross National Disposable Income.

Items	₹ (*in crores*)
1. Govt. final consumption expenditure	50
2. Net imports	10
3. Change in stock	5
4. Consumption of fixed capital	20
5. Private final consumption expenditure	300
6. Net factor income from abroad	(–) 5
7. Net domestic capital formation	50
8. Net current transfers from abroad	10
9. Net indirect tax	15

Solution.

(*a*) Net National Disposable Income = NNP_{MP} + Net current transfers from abroad

NNP_{MP} = Govt. final consmp. exp. + Private final consmp. exp. + Net domestic capital formation − Net imports + *NFIA*

= 50 + 300 + 50 − 10 + (− 5)

= ₹ 385 crores.

NNDI = 385 + 10 = ₹ 395 crores.

(*b*) Gross National Disposable Income = *NNDI* + consumption of fixed capital

= 395 + 20

= ₹ 415 crores.

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Illustration 8. Calculate 'Net National Product at Factor Cost' and 'Gross National Disposable Income' from the following: (*AI 2014*)

	(₹ *in Arab*)
(*i*) Social security contributions by employees	90
(*ii*) Wages and salaries	800
(*iii*) Net current transfers to abroad	(–) 30
(*iv*) Rent and royalty	300
(*v*) Net factor income to abroad	50
(*vi*) Social security contributions by employers	100
(*vii*) Profit	500
(*viii*) Interest	400
(*ix*) Consumption of fixed capital	200
(*x*) Net indirect tax	250

Solution.

NNP_{FC} = (*ii*) + (*vi*) + *iv* + *viii* + *vii* – *x*

= [800 + 100] + 300 + 400 + 500 – 50

= ₹ 2050 Arab

GNDI = NNP_{FC} + *ix* + *x* – *iii*

= 2050 + 200 + 250 – (– 30) = ₹ 2530 Arab

Illustration 9. Calculate National Income and Gross National Disposable Income from the following: (*Delhi 2014*)

	(₹ *Arab*)
(*i*) Net current transfers to abroad	(–) 15
(*ii*) Private final consumption expenditure	600
(*iii*) Subsidies	20
(*iv*) Government final consumption expenditure	100
(*v*) Indirect tax	120
(*vi*) Net imports	20
(*vii*) Consumption of fixed capital	35
(*viii*) Net change in stocks	(–)10
(*ix*) Net factor income to abroad	5
(*x*) Net domestic capital formation	110

Solution.

NNP_{FC} = Private final consumption expenditure + Government final consumption expenditure + [Net domestic capital formation + Consumption of fixed capital] + Net exports + NFIA – Net indirect taxes – Depreciation

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$= 600 + 100 + [110 + 35] + [-20] + [-5] - [120 - 20] - 35$

$= ₹ 685$ Arab

$GNDI = GNP_{MP}$ + Net current transfer firm ROW

$= [NNP_{FC}$ + depreciation + net indirect taxes] + 15

$= 685 + 35 + [120 - 20] + 15$

$= ₹ 835$ Arab

Illustration 10. Calculate 'net national product' at factor cost and 'private income' from the following: (*Delhi 2014*)

	(₹ *Arab*)
(*i*) National debt interest	60
(*ii*) Wages and salaries	600
(*iii*) Net current transfers to abroad	20
(*iv*) Rent	200
(*v*) Transfer payments by government	70
(*vi*) Interest	300
(*vii*) Net domestic product at factor cost accruing to government	400
(*viii*) Social security contributions by employers	100
(*ix*) Net factor income paid to abroad	50
(*x*) Profit	300

Solution.

$NNP_{FC} = (ii + viii) + iv + vi + x - ix$

$= (600 + 100) + 200 + 300 + 300 - 50$

$= ₹ 1450$ Arab

Private income $= NNP_{FC} + vii + i + v - iii$

$= 1450 - 400 + 60 + 70 - 20 = ₹ 1160$ Arab

Illustration 11. Calculate 'Gross National Product at Market Price' and 'Net National Disposable Income' from the following: (*Foreign 2014*)

	(₹ *Arab*)
(*i*) Net factor income to abroad	(–)10
(*ii*) Net current transfers to abroad	20
(*iii*) Wages and salaries	400
(*iv*) Corporation tax	50
(*v*) Profit after corporation tax	150
(*vi*) Social security contributions by employers	50
(*vii*) Rent	100
(*viii*) Interest	70

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(*ix*) Mixed income of self-employed 300
(*x*) Net indirect tax 140
(*xi*) Consumption of fixed capital 80

Solution.

$$GNP_{FC} = [(iii) + (vi)] + vii + viii + [iv + v] + ix + xi + x - i$$
$$= [400 + 50] + 100 + 70 + [50 + 150] + 300 + 80 + 140 - (-10)$$
$$= ₹\ 1350 \text{ Arab}$$
$$NNDI = GNP_{MP} - xi - ii$$
$$= 1350 - 80 - 20$$
$$= ₹\ 1250 \text{ Arab}$$

3.8 FORMULAE OF RELATED AGGREGATES OF NI AND DISPOSABLE INCOME

Table 3.7 summarises all the formulae.

Table 3.7 **Formulae of Different Concepts of *NI* and Related Aggregates**

1. Factor Income from *NDP* accruing to private sector	= Compensation of employees + Rent + Interest + Profit + Mixed Income (all accruing to the private sector)	... (1)
	= NDP_{FC} – Income from property and entrepreneurship accruing to govt. administrative departments – Savings of non-departmental enterprises.	... (2)
2. Income from domestic product accruing to public sector	= Income from property and entrepreneurship to govt. administrative departments + Savings of non-departmental govt. enterprises	
3. Private Income	= Income from domestic product accruing to private sector + Current transfers from government + Interest on national debt + *NFIA* + Other net transfers from rest of the world	...(1)
	= NDP_{FC} – Income from domestic product accruing to public sector + Interest on national debt + All current transfer incomes + *NFIA*	... (2)
4. Personal Income	= Private income – Corporate taxes – Undistributed profits or savings of private Corporate sector net of retained earnings of foreign companies	... (1)
	= *NI* – Surplus of public sector – Corporation taxes – Undistributed profit + Transfer Income	... (2)
5. Personal Disposable Income	= Personal income – Personal taxes – Miscellaneous receipts of the government	... (1)
	= Consumption + Savings	... (2)

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6. Gross National Disposable Income or *GNDI*	= GNP_{MP} + Net current transfers received from rest of the world	... (1)
	= Final consumption expenditure + Gross saving	... (2)
7. Net National Disposable Incomes or *NNDI*	= NNP_{MP} + Net current transfers received from rest of the world	... (1)
	= Final consumption expenditure + Net saving	... (2)

Points to Remember

Different Concepts of National Income

1. **Income from Net Domestic Product Accruing to Private Sector**

   Income from net domestic product accruing to private sector is that part of factor cost of net domestic product generated in the form of compensation of employees, operating surplus and mixed income which accrues to the private sector.

2. **Income from Net Domestic Product Accruing to Public/Govt. Sector**

   It is defined as the sum of property and entrepreneurial income of departmental enterprises and saving of non-departmental enterprises.

3. **Private Income**

   Private Income is the total of factor income from all sources including net factor income from abroad and current transfers from the government and rest of the world plus interest on national debt accruing to private sector.

4. **Personal Income**

   Personal Income is the income actually received by persons from all sources in the form of current transfer payments and factor income. It does not include (*i*) Corporation tax and (*ii*) Corporate saving.

5. **Disposable Income**

   Disposable Income is defined as the income remaining with individuals after deduction of all taxes levied against their income and their property by the government.

6. **National Disposable Income**

   It is the maximum the country can afford to spend on consumption of goods or services during an accounting year without increasing its liabilities. It can be gross or net.

Real and Nominal *GDP*

Real *GDP* is the value of current output at base year prices. The base year is 1993-94.
Nominal *GDP* is the value of current output at current year prices. The conversion formula is:

$$GDP \text{ at constant prices} = \frac{GDP \text{ at current prices}}{\text{Price Index for current year}} \times \text{BaseYear}$$

***GDP* Deflator**

$$GDP \text{ Deflator} = \frac{\text{Nominal } GDP}{\text{Real } GDP} \times 100$$

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Does *GDP* Measure Economic Welfare

No, *GDP* is not a sufficient measure of economic welfare since it ignores prices, level of unemployment, composition of output, pollution level, population growth, etc.

Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. What is nominal gross domestic product? (*Delhi 2011*)

2. Define 'real' gross domestic product. (*Foreign 2011*)

3. What is *GNP* deflator?

4. What is Green *GNP*?

Multiple Choice Questions

1. Personal income is sum total of income actually received by person from all sources in the form of current transfer payments and _____ :

(*a*) Rent (*b*) Factor incomes (*c*) Profit (*d*) Wages

2. GDP deflator is:

(*a*) $\frac{\text{Nominal } GDP}{\text{Real } GDP} \times 100$ (*b*) $\frac{\text{Real } GDP}{\text{Nominal } GDP}$

(*c*) Real *GDP* × 100 (*d*) None of the above

3. GNDI is Net current transfers from rest of the world plus:

(*a*) GNP_{MP} (*b*) NNP_{FC} (*c*) NDP_{FC} (*d*) NDP_{MP}

4. Factor income from *NDP* accruing to private sector is NDP_{FC} minus income from property and entrepreneurship accruing to government administrative department minus:

(*a*) Savings of non-departmental govt. enterprise
(*b*) Savings
(*c*) Net indirect taxes
(*d*) Corporate taxes

5. Externalities are spillover effects borne by:

(*a*) Third party (who is neither producer nor consumer)
(*b*) Producer or 1st party
(*c*) Consumer or 2nd party
(*d*) All of the above

Short Answer Type Questions **(*3/4 Marks*)**

1. Give the meaning of Nominal *GDP* and Real *GDP*. Which of these is the indicator of economic welfare? (*Sample Paper 2009*)

2. Explain how 'distribution of gross domestic product' is a limitation in taking gross domestic product as an index of welfare. (*Delhi 2011*)

3. Explain how 'non-monetary exchanges' are a limitation in taking gross domestic product as an index of welfare. (*AI 2011*)

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4. Explain how 'externalities' are a limitation in taking gross domestic product as an index of welfare. (*Foreign 2011*)
5. Distinguish between "real" gross domestic product and "nominal" gross domestic product. Which of these is a better index of welfare of the people and why? (*AI 2013*)

Long Answer Type Questions **(*6 Marks*)**

1. What is national disposable income? How is it calculated?
2. How will you derive personal disposable income from national income?
3. Distinguish between real gross domestic product and nominal gross domestic product. Can gross domestic product be used as an index of welfare of the people? Give two reasons. (*Foreign 2010*)

Numerical Exercises

(Note: Students must know the formulae. These questions are applying the knowledge of formulae)

Short Answer Type Questions **(*3/4 Marks*)**

1. Calculate Private Income:

Items	₹ (*in crores*)
1. National debt interest	10
2. Personal disposable income	150
3. Personal taxes	50
4. Corporate profit tax	25
5. Retained earnings of private corporations	5

[*Ans.* ₹ 230 *crores*] (*Delhi 2009*)

2. Calculate Personal Income:

Items	₹ (*in crores*)
1. Retained earnings of private corporations	20
2. Miscellaneous receipts of govt. admins. deptt.	50
3. Personal disposable income	200
4. Personal tax	30
5. Corporate profit tax	10

[*Ans.* ₹ 280 *crores*] (*AI 2009*)

3. Calculate Personal Disposable Income:

Items	₹ (*in crores*)
1. Private income	3000
2. Net retained earnings of private enterprises	600
3. Direct taxes paid by households	300
4. Corporation tax	350
5. National debt interest	250

[*Ans.* ₹ 1750 crores]

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4. Calculate Net National Disposable Income:

Items	₹ (*in crores*)
1. Government final consumption expenditure	60
2. Net imports	10
3. Change in stock	5
4. Consumption of fixed capital	20
5. Private final consumption expenditure	250
6. Net factor income from abroad	(–) 5
7. Net domestic capital formation	40
8. Net current transfers from abroad	10
9. Net indirect tax	15

[*Ans.* ₹ 345 *crores*]

Long Answer Type Questions **(*6 Marks*)**

1. Calculate from the following data (*a*) Net national disposable income, (*b*) Private income and (*c*) Personal disposable income:

Items	₹ (*in crores*)
1. National income	800
2. Indirect taxes	70
3. Subsidies	10
4. Savings of non-departmental enterprises	30
5. National debt interest	50
6. Net factor income from abroad	(–)20
7. Consumption of fixed capital	40
8. Current transfers from rest-of-the-world	45
9. Income from property and entrepreneurship accruing to government administrative departments	60
10. Direct taxes paid by households	40
11. Profits	100
12. Savings of private corporate sector net of retained earnings of foreign companies	80
13. Current transfers from government administrative departments	90
14. Corporation tax	25

[*Ans.* (*a*) ₹ 905 *crores*; (*b*) ₹ 895 *crores*; (*c*) ₹ 750 *crores*]

2. From the following data calculate:

(*a*) Private income and (*b*) Personal disposable income. (*Delhi 2006*)

Items	₹ (*in crores*)
1. Income from domestic product accruing to the private sector	4,000
2. Savings of non-departmental public enterprises	200
3. Current transfers from government administrative departments	150
4. Savings of private corporate sector	400

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5. Current transfers from rest of the world	50
6. Net factor income from abroad	(–)40
7. Corporation tax	60
8. Direct personal taxes	140

[*Ans.* (*a*) ₹ 4160 *crores*; (*b*) ₹ 3560 *crores*]

3. Calculate (*a*) Private income and (*b*) Personal disposable income from the following data: (*AI 2006*)

Items	₹ (*in crores*)
1. Income from property and entrepreneurship accruing to government administrative departments	500
2. Savings of non-departmental public enterprises	100
3. Corporation tax	80
4. Income from domestic product accruing to private sector	4,500
5. Current transfer from government administrative departments	200
6. Net factor income from abroad	(–)50
7. Direct personal taxes	150
8. Indirect tax	220
9. Current transfers from rest of the world	80
10. Savings of private corporate sector	500

[*Ans.* (*a*) ₹ 4730 *crores*; (*b*) ₹ 4000 *crores*]

4. Calculate Personal Disposable Income from the following data: (*AI 2006*)

Items	₹ (*in crores*)
1. Net current transfers from rest of the world	3
2. Private Income	200
3. Personal taxes	30
4. National debt interest	5
5. Corporate profit tax	20
6. Undistributed profits	10

[*Ans.* ₹ 140 *crores*]

5. Calculate (*a*) *PDI*, (*b*) Personal Income, (*c*) Private Income from the following data:

Items	₹ (*in crores*)
1. Direct tax paid by the households	6,500
2. Corporation tax	1,500
3. Household final consumption expenditure	24,500
4. Interest on national debt	2,000
5. Saving of private corporate sector	3,500
6. Household savings	7,500

[*Ans.* (*a*) ₹ 32000 *crores*; (*b*) ₹ 38500 *crores*; (*c*) ₹ 43500 *crores*]

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6. Calculate 'private income' from the following data: (*Delhi 2007*)

Items	₹ (*in crores*)
1. National debt interest	30
2. Gross national product at market price	400
3. Current transfers from government	20
4. Net indirect taxes	40
5. Net current transfers from the rest of the world	(–)10
6. Net domestic product at factor cost accruing to government	50
7. Consumption of fixed capital	70

[*Ans.* ₹ 280 *crores*]

7. Calculate Personal Income from the following: (*AI 2007*)

Items	₹ (*in crores*)
1. Undistributed profits of corporations	20
2. Net domestic product accruing to the private sector	500
3. Corporation tax	55
4. Net factor income from abroad	(–)10
5. Net current transfers from government	15
6. National debt interest	40
7. Net current transfers from the rest of the world	15

[*Ans.* ₹ 485 *crores*]

8. Calculate Personal Disposable Income from the following data: (*Foreign 2007*)

Items	₹ (*in crores*)
1. Personal taxes	60
2. Net National Product a factor cost accruing to the private sector	600
3. Undistributed profits	10
4. National debt interest	50
5. Corporation tax	100
6. Net current transfers from the rest of the world	(–)20
7. Current transfers from government	30

[*Ans.* ₹ 490 *crores*]

9. Calculate 'net national disposable income' from the following data: (*Delhi 2007*)

Items	₹ (*in crores*)
1. Net domestic product at factor cost	500
2. Net indirect tax	50
3. Net factor income from abroad	(–)20
4. Net exports	(–)30
5. Net current transfers from rest of the world	40

[*Ans.* ₹ 570 *crores*]

10. Calculate Net National Product at market price from the following data:

Items	₹ (*in crores*)
1. Income from domestic product accruing to private sector	2,000
2. Interest on national debt	125
3. Net factor income earned from abroad	(–)350

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4. Government final consumption expenditure	500
5. Consumption of fixed capital	200
6. Net indirect taxes	100
7. Net export of goods and services	(–)200
8. Net value added in stock	150
9. Fixed capital formation	250

[*Ans.* ₹ 2150 *crores*]

11. Calculate Gross National Product at Market Price and Net National Disposable Income from the following data:

Items	₹ (*in crores*)
1. Net current transfers to abroad	(–)5
2. Profit	70
3. Consumption of fixed capital	30
4. Rent	40
5. Indirect tax	20
6. Interest	100
7. Royalty	10
8. Compensation of employees	600
9. Subsidy	5
10. Net factor income from abroad	(–)25

[*Ans.* (*a*) ₹ 840 *crores*; (*b*) ₹ 815 *crores*] (*Delhi 2008*)

12. Calculate National Income and Net National Disposable Income from the following data:

Items	₹ (*in crores*)
1. Net current transfers to abroad	15
2. Net exports	(–)20
3. Private final consumption expenditure	400
4. Net factor income to abroad	10
5. Government final consumption expenditure	100
6. Indirect tax	30
7. Net domestic capital formation	50
8. Change in stock	7
9. Subsidy	5

[*Ans.* (*a*) ₹ 495 *crores*; (*b*) ₹ 505 *crores*] (*Delhi 2008*)

13. Calculate Gross National Product at Market Price and Personal Income from the following data:

Items	₹ (*in crores*)
1. Corporation tax	35
2. Wages and salaries	200
3. National debt interest	25
4. Operating surplus	400

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5.	Net current transfers from abroad	15
6.	Net factor income from abroad	(–)10
7.	Consumption of fixed capital	20
8.	Social security contribution by employees	30
9.	Net indirect tax	40
10.	Net domestic product at factor cost accruing to the private sector	500
11.	Current transfers from government	5

[*Ans.* (*a*) ₹ 650 *crores*; (*b*) ₹ 500 *crores*] (*AI 2008*)

14. Calculate Net Domestic Product at factor cost and Net National Disposable Income from the following data:

	Items	₹ (*in crores*)
1.	Net indirect tax	60
2.	Wages and salaries	600
3.	Net current transfers from abroad	(–)10
4.	Rent	50
5.	Interest	200
6.	Profit	150
7.	Net factor income from abroad	(–)20
8.	Royalty	40
9.	Social security contributions by employer's	100

[*Ans.* (*a*) ₹ 1140 *crores*; (*b*) ₹ 1170 *crores*] (*Foreign 2008*)

15. Calculate National Income and Private Income from the following data:

	Items	₹ (*in crores*)
1.	Current transfers by government	25
2.	Net domestic product at factor cost accruing to the government	90
3.	Govt. final consumption expenditure	200
4.	Net exports	(–)50
5.	National debt interest	60
6.	Net domestic capital formation	100
7.	Consumption of fixed capital	30
8.	Net factor income paid to abroad	20
9.	Private final consumption expenditure	600
10.	Net indirect tax	40
11.	Net current transfers from abroad	(–)10

[*Ans.* (*i*) ₹ 790 *crores*; (*ii*) ₹ 775 *crores*] (*Foreign 2008*)

16. From the following data calculate (*i*) Gross National Product at factor cost and (*ii*) Net National Disposable Income:

	Items	₹ (*in crores*)
1.	Net indirect tax	800
2.	Net domestic fixed capital formation	500

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3.	Consumption of fixed capital	100
4.	Private final consumption expenditure	5000
5.	Govt. final consumption expenditure	2000
6.	Net factor income **to** abroad	50
7.	Net exports	(–)50
8.	Change in stock	(–)30
9.	Current transfers from rest of the world	70
10.	Compensation of employees	2500
11.	Current transfers to rest of the world	40

[*Ans.* (*i*) ₹ 6670 *crores*; (*ii*) ₹ 7400 *crores*] (*Delhi 2008*)

17. From the following data calculate (*i*) Net Domestic Product at factor cost and (*ii*) Gross National Disposable Income:

	Items	₹ (*in crores*)
1.	Net current transfers **to** the rest of the world	(–)60
2.	Net factor income from abroad	(–)40
3.	Government final consumption expenditure	2000
4.	Private final consumption expenditure	6000
5.	Net domestic fixed capital formation	800
6.	Gross domestic capital formation	950
7.	Change in stock	50
8.	Net exports	(–)50
9.	Profits	1000
10.	Net indirect tax	700

[*Ans.* (*i*) ₹ 8100 *crores*; (*ii*) ₹ 8920 *crores*] (*Delhi 2008*)

18. From the following data calculate (*i*) Net National Product at factor cost and (*ii*) Gross National Disposable Income:

	Items	₹ (*in crores*)
1.	Gross domestic capital formation	210
2.	Change in stock	(–)30
3.	Private final consumption expenditure	3000
4.	Government final consumption expenditure	1000
5.	Net exports	(–)20
6.	Net factor income from abroad	(–)10
7.	Net domestic fixed capital formation	200
8.	Net current transfers from rest of the world	30
9.	Interest on public debt	15
10.	Personal tax	25
11.	Net indirect tax	170
12.	Undistributed profits	250

[*Ans.* (*i*) ₹ 3970 *crores*; (*ii*) ₹ 4210 *crores*] (*AI 2008*)

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19. Calculate Gross National Disposable Income and Personal Income from the given data:

Items	₹ (*in crores*)
1. Personal tax	120
2. Net indirect tax	100
3. Corporation tax	90
4. National income	1000
5. Net factor income from abroad	5
6. Consumption of fixed capital	50
7. National Debt interest	70
8. Retained earnings of private corporate sector	40
9. Net current transfers **to** the rest of the world	(–)20
10. Current transfers from government	30
11. Share of government in national income	80

[*Ans.* (*i*) ₹ 1170 *crores*; (*ii*) ₹ 910 *crores*] (*Sample Paper 2009*)

20. Calculate GNP_{MP} and Personal Disposable Income from the following data:

Items	₹ (*in crores*)
1. Subsidy	20
2. Net factor income from abroad	(–) 60
3. Consumption of fixed capital	50
4. Personal tax	110
5. Savings of private corporations	40
6. Dividend	20
7. Indirect tax	100
8. Corporation tax	90
9. Net national disposable income	1000
10. National debt interest	30
11. Net current transfers from abroad	20
12. Current transfers from government	50
13. Private income	700
14. Private final consumption expenditure	380
15. Misc. receipts of govt. administrative department	30

[*Ans.* (*i*) ₹ 1030 *crores*; (*ii*) ₹ 430 *crores*] (*Sample paper 2009*)

21. Calculate National Income, and Gross National Disposable Income:

Items	₹ (*in crores*)
1. Exports	80
2. Private final consumption expenditure	600
3. Net current transfer **to** the rest of the world	(– 5)
4. Government final consumption expenditure	100
5. Subsidies	20
6. Indirect taxes	80
7. Net domestic fixed capital formation	150

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8. Net factor income from abroad	(–) 10
9. Closing stock	60
10. Opening stock	10
11. Net imports	50
12. Consumption of fixed capital	50

[*Ans.* (*i*) ₹ 780 *crores*; (*ii*) ₹ 895 *crores*] (*Delhi 2009*)

22. Calculate Gross National Product at Market Price and Net National Disposable Income:

Items	₹ (*in crores*)
1. Net current transfers from abroad	10
2. Wages and Salaries	800
3. Net indirect taxes	140
4. Social security contributions by employers	100
5. Consumption of fixed capital	80
6. Rent	200
7. Net factor income **to** abroad	20
8. Royalty	50
9. Personal tax	90
10. Corporation tax	50
11. Profit before tax	150
12. Interest	300

[*Ans.* (*i*) ₹ 1800 *crores*; (*ii*) ₹ 1730 *crores*] (*Delhi 2009*)

23. Calculate Gross National Product at Market Price and Net National Disposable Income:

Items	₹ (*in crores*)
1. Net current transfers from abroad	(–) 10
2. Compensation of employees	800
3. Net indirect tax	50
4. Social security contributions by employers	80
5. Consumption of fixed capital	30
6. Rent	300
7. Net factor income **to** abroad	10
8. Interest paid by production units	400
9. Royalty	40
10. National debt interest	14
11. Profit after tax	250
12. Retained earnings	20
13. Corporation tax	50

[*Ans.* (*i*) ₹ 1910 *crores;* (*ii*) ₹ 1870 *crores*] (*AI 2009*)

24. Find National Income and Net National Disposable Income:

Items	₹ (*in crores*)
1. Exports	25

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2.	Government final consumption expenditure	300
3.	Net current transfers to rest of the world	(–) 10
4.	Net domestic fixed capital formation	200
5.	Net factor income **to** abroad	20
6.	Private final consumption expenditure	1000
7.	Net indirect tax	30
8.	Opening stock	60
9.	Net Imports	30
10.	Closing stock	50

[*Ans.* (*i*) ₹ 1410 *crores*; (*ii*) ₹ 1450 *crores*] (*AI 2009*)

25. Calculate Net National Product at Market Price and Gross National Disposable Income: (*Delhi 2011*)

	Items	₹ (*in arab*)
1.	Consumption of fixed capital	40
2.	Change in stocks	(–)10
3.	Net imports	20
4.	Gross domestic fixed capital formation	100
5.	Private final consumption expenditure	800
6.	Net current transfers **to** the rest of the world	5
7.	Government final consumption expenditure	250
8.	Net factor income to abroad	40
9.	Net indirect tax	130

[*Ans.* NNP_{MP} = ₹ 1,040 *Arab*; GNDI = ₹ 1075 *Arab*]

26. Calculate (*a*) 'Net National Product at Market Price' and (*b*) 'Private Income' from the following: (*AI 2011*)

	Items	₹ (*in crores*)
1.	Net current transfers **to** abroad	30
2.	Mixed income	600
3.	Subsidies	20
4.	Operating surplus	200
5.	National debt interest	70
6.	Net factor income to abroad	10
7.	Compensation of employees	1400
8.	Indirect tax	100
9.	Domestic product accruing **to** government	350
10.	Current transfers by government.	50

[*Ans.* NNP_{MP} = ₹ 2,270 *crores*; Private Income = ₹ 1,810 *crores*]

27. Calculate (*a*) 'Net Domestic Product at Factor Cost' and (*b*) 'Private Income' from the following: (*AI 2011*)

	Items	₹ (*in crores*)
1.	Domestic product accruing to government	300
2.	Wages and salaries	1000

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3. Net current transfers **to** abroad	(–)20
4. Rent	100
5. Interest paid by the production units	130
6. National debt interest	30
7. Corporation tax	50
8. Current transfers by government	40
9. Contribution to social security schemes by employers	200
10. Dividends	100
11. Undistributed profits	20
12. Net factor income to abroad	0

[*Ans.* NDP_{FC} = ₹ 1600 *crores*; P.I. = ₹ 1390 *crores*]

28. Calculate National Income and Personal Disposable Income from the following: (*Foreign 2011*)

Items	₹ (*in crores*)
1. Personal tax	150
2. Net imports	(–)10
3. Private final consumption expenditure	700
4. Private income	600
5. Undistributed profit	20
6. Net domestic capital formation	120
7. Government final consumption expenditure	200
8. Net factor income **to** abroad	(–)5
9. Corporation tax	100
10. Net indirect tax	105

[*Ans.* N.I. = ₹ 930 *crores*; PDI = ₹ 330 *crores*]

29. Find out (*a*) national income and (*b*) net national disposable income:

Items	₹ (*in crores*)
1. Factor income from abroad	15
2. Private final consumption expenditure	600
3. Consumption of fixed capital	50
4. Government final consumption expenditure	200
5. Net current transfers to abroad	(–) 5
6. Net domestic fixed capital formation	110
7. Net factor income to abroad	10
8. Net imports	(–) 20
9. Net indirect tax	70
10. Change in stocks	(–) 10

[*Ans.* (*a*) ₹ 840 *crores*; (*b*) ₹ 915 *crores*] (*Delhi 2012*)

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30. Find out (*a*) Net National Product at Market Price and (*b*) Gross National Disposable Income:

Items	₹ (*in crores*)
1. Net current transfers from abroad	(–) 10
2. Wages and Salaries	1,000
3. Net factor income to abroad	(–) 20
4. Social security contributions by employers	100
5. Net Indirect Tax	80
6. Rent	300
7. Consumption of fixed capital	120
8. Corporation Tax	50
9. Dividend	200
10. Undistributed profits	60
11. Interest	400

[Ans. (*a*) ₹ 2210 *crores*; (*b*) ₹ 2320 *crores*] (*Delhi 2012*)

31. Calculate net national disposable income from the following data :

	(₹ *in crores*)
1. Gross domestic product at market price	2000
2. Net current transfers to rest of the world	(–)200
3. Net indirect taxes	150
4. Net factor income to abroad	60
5. National debt interest	70
6. Consumption of fixed capital	200
7. Current transfers from Government	150

[Ans. ₹ 1940 crores] (*Delhi 2013*)

32. Calculate "Gross National Disposable Income" from the following data :

	(₹ *in crores*)
1. Net domestic product at factor cost	3,000
2. Interest taxes	300
3. Net current transfers from rest of the world	250
4. Current transfers from the government	100
5. Net factors income to abroad	150
6. Consumption of fixed capital	200
7. Subsidies	100

[Ans. ₹ 3500 crores] (*AI 2013*)

33. Calculate net domestic product at factor cost and net national disposable income from the following: (*Delhi 2014*)

	(₹ *Arab*)
(*i*) Net current transfers to abroad	5
(*ii*) Government final consumption expenditure	100

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(*iii*) Net indirect tax	80
(*iv*) Private final consumption expenditure	300
(*v*) Consumption of fixed capital	20
(*vi*) Gross domestic fixed capital formation	50
(*vii*) Net imports	(–) 10
(*viii*) Closing stock	25
(*ix*) Opening stock	25
(*x*) Net factor income to abroad	10

[Ans. NDP_{Fc} = ₹ 360 *Arab*, NNDI = ₹ 425 *Arab*]

34. Calculate 'National Income' and 'Net National Disposable Income' from the following:

(*AI 2014*)

	(₹ *Arab*)
(*i*) Net change in stocks	50
(*ii*) Government final consumption expenditure	100
(*iii*) Net current transfers to abroad	30
(*iv*) Gross domestic fixed capital formation	200
(*v*) Private final consumption expenditure	500
(*vi*) Net imports	40
(*vii*) Depreciation	70
(*viii*) Net factor income to abroad	(–)10
(*ix*) Net indirect tax	120
(*x*) Net capital transfers to abroad	25

[Ans. NI = ₹ 630 *Arab* NNDI=₹ 720 *Arab*]

35. Calculate 'Net National Product at Market Price' and 'Gross National Disposable Income' from the following:

(*AI 2014*)

	(₹ *Arab*)
(*i*) Closing stock	10
(*ii*) Consumption of fixed capital	40
(*iii*) Private final consumption expenditure	600
(*iv*) Exports	50
(*v*) Opening stock	20
(*vi*) Government final consumption expenditure	100
(*vii*) Imports	60
(*viii*) Net domestic fixed capital formation	80
(*ix*) Net current transfers to abroad	(–)10
(*x*) Net factor income to abroad	30

[Ans. NNP_{MP} = ₹ 730 *Arab* GNDI = ₹ 780 *Arab*]

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Answers

Multiple Choice Questions

1. (*b*) **2.** (*a*) **3.** (*a*) **4.** (*a*) **5.** (*a*)

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Value Based and Higher Order Thinking (HOT) Questions (*With Answers*)

Unit 5: National Income and Related Aggregates

Q1. Explain how are the following treated while estimating national income:

(*i*) Royalty income

(*ii*) Commission on sale of second-hand goods

(*iii*) Purchase of car by a household.

Ans. (*i*) Royalty income is similar to rent and amounts to productive income and therefore, will be included in the national income.

(*ii*) Commission on sale of second-hand goods is the income of the person for his productive services to various parties and therefore, will be included in the national income.

(*iii*) Purchase of car by a household is included in the national income because it is private final consumption expenditure which is a part of national income.

Q2. Explain the concepts of injections and leakages in an open economy.

Ans. **Injection** is an addition to the circular flow of income. It increases the size of circular flow. **Leakages** are withdrawals from a circular flow of income. It reduces the size of circular flow. For stability in the circular flow of income,

Leakages ≡ Injections ... denotes ≡ identity

or $S + T + M \equiv I + G + X$

or [Saving + Taxes + Imports] ≡ [Investment + Government Purchases + Exports]

Q3. Why is GDP_{MP} called Gross?

Ans. GDP_{MP} is final products valued at market price. This is what buyers pay. But this is not what production units actually receive. Out of what buyers pay, the production units have to make provision for depreciation and payment of indirect taxes like excise, sales tax, etc. This explains why GDP_{MP} is called 'gross'. It is called gross because no provision has been made for depreciation. However, if depreciation is deducted from the *GDP*, it becomes Net Domestic Product (*NDP*).

Q4. Why is GDP_{MP} called 'at Market Price'?

Ans. Out of what buyers pay, the production units have to make payments of indirect taxes, if any. Sometimes production units receive subsidy on production. This is in addition to the market price which production units receive from the buyers. Therefore, what production units actually receive is not the 'market price' but "market price is—indirect tax + subsidies". This is what is actually available to production units for distribution of income among the owners of factors of production.

Q5. Give examples of factor income earned from abroad by Indian residents.

Ans. Examples of factor income earned from abroad by Indian residents are:

(*i*) Profits earned by State Bank of India located in England come under the category of net factor income earned from abroad by Indian residents.

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(*ii*) Compensation of employees paid to Indian employees working in the Embassy like American and Japanese Embassies located in India come under the category of factor income earned from abroad by Indian residents.

(*iii*) Rent received by State Bank of India on the building rented to a foreign embassy in New Delhi.

(*iv*) Interest income received by Indians on the bonds they purchased from foreign countries.

(*v*) Compensation of employees paid to Indian employees working in the office of the World Bank located in India.

Q6. Are the following items included in estimating a country's national income? Give reasons.

(*i*) Expenditure on purchase of an old house

(*ii*) Brokerage on sale of shares

(*iii*) Meals given to the beggars.

Ans. (*i*) Expenditure on purchase of an old house will not be included in the national income because it has no relationship with the production of goods and services during the year.

(*ii*) Brokerage on sale of shares is included in the estimation of national income because it is the income of the agent for his services to various parties.

(*iii*) Meals given to the beggars is not included in the national income because it is an expenditure without any productive return. It does not amount to any flow of income and production.

Q7. Are the following items included in estimating a country's national income? Give reasons.

(*i*) Contribution to provident fund by employer

(*ii*) Production for self-consumption by farmer

(*iii*) Income from smuggling.

Ans. (*i*) Contribution to provident fund by employer is a part of wages or compensation to employees which is given to the employees for their contribution in the production process. Therefore, it is included in the national income.

(*ii*) Production for self-consumption by farmer is included in the estimation of national income because it results in production of final goods. It results in a flow of income.

(*iii*) Income from smuggling is not included in the estimation of national income because it is an illegal income and it is without any economic production of goods and services.

Q8. Are the following items included in estimating a country's national income? Give reasons.

(*i*) Receipt of scholarship from government

(*ii*) Sale of shares

(*iii*) Construction of a new house.

Ans. (*i*) Receipt of scholarship from government is not a factor income but a transfer payment and therefore, it is not included in the national income.

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(*ii*) Sale of shares is receipt on account of financial or paper claims and not on account of sale of goods and services. Therefore, it will not be included in the national income.

(*iii*) Construction of a new house amounts to production of goods and services in an economy, therefore it will be included in the national income.

Q9. Define:

(*i*) Green *GNP*

(*ii*) *GNP* Deflator

(*iii*) *NI* at constant price.

Ans. (*i*) Green *GNP* is defined as, "*GNP* which would help to attain a sustainable use of natural environment and equitable distribution of benefits of development." This concept is used to denote sustainable economic development, *i.e.*, development which should not cause environmental degradation (pollution) and depletion of resources and at the same time promote economic welfare for a long period of time.

(*ii*) *GNP* deflator measures the average level of prices of all goods and services that make *GNP*. It is calculated by the formula:

$$\textbf{GNP Deflator} = \frac{\textbf{Nominal } GNP}{\textbf{Real } GNP} \times 100$$

(*iii*) The national income at current prices includes changes in price to neutralise the effect of changes in price, national income at current prices is converted into national income at constant prices. The *formula* for conversion is:

$$\textbf{National Income at Constant Prices} = \frac{\textbf{National Income at Current Prices}}{\textbf{Price Index for the Current Prices}} \times \textbf{Base Year}$$

where Base Year = Price index of base year is always taken to be 100.

Q10. Give advantages of real *GDP*.

Ans. The advantages are:

(*i*) It is useful in determining the effect of increased production on the real development of the economy.

(*ii*) It helps to make yearly comparison of the changes in the growth of output of goods and services.

(*iii*) It is useful in making international comparisons of economic performance.

Q11. Are the following included in national income of a country? Give reason.

(*a*) Vegetables grown for self-consumption

(*b*) Cooking done by housewife.

Ans. (*a*) Yes, because there is production taking place.

(*b*) No, because it is done out of love.

Q12. Define economic territory.

Ans. Economic territory is the geographical territory administered by a government within which person, goods and capital circulate freely.

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Q13. Are the following included in compensation of employees? Give reason.

(*a*) Old age pension

(*b*) Retirement pension

Ans. (*a*) No, as old age pension is a transfer payment

(*b*) Yes, because it is the payment for services rendered in the past.

Q14. What are externalities? Give an example of a positive externality and its impact on welfare of the people (*AI 2014*)

Ans: Externalities refer to positive or negative side effects borne by people, who are neither producers nor consumers. Positive externality generates external benefits. For example:

(*i*) If a person uses CNG, then pollution level falls, (*ii*) If a person takes a vaccine for an infectious flu, then others in the society benefit. **Impact:** it raises welfare of the people.

Q15. Define externalities. Give an example of negative externality. What is its impact on welfare? (*AI 2014*)

Ans: Externalities are spillovers. They are positive or negative side effects borne by the third party (other than producer and consumer). Externalities can be of two types 1. Positive externality, 2. Negative externality. Negative externality have negative effect on the well-being of the third party. They generate external cost.

Examples:

1. Pollution of lakes and rivers creates external cost for the fishing industry.
2. A smoker causes discomfort to non-smokers.

Impact: Negative externality reduces the welfare of society.

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NCERT Textual Questions with Answers

Unit 5: National Income and Related Aggregates

Q1.What is the difference between microeconomics and macroeconomics?

Ans. Difference between the two branches of economics are as follows:

	Microeconomics	Macroeconomics
(*a*) Basis of study	It studies problems of scarcity and choice at an individual level.	It studies problems of scarcity and choice at an economy's level.
(*b*) How much can be summed up	Limited summing up. *Example*, industry is summing up of all firms producing a particular commodity.	Complete summing up. *Example*, aggregate demand is demand for all goods and services in the economy as a whole.
(*c*) Main Problem	To determine allocation of resources.	To determine level of income and output.
(*d*) Method of study	Partial equilibrium method (assuming other things constant).	General equilibrium method (taking all relationships simultaneously).

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Q2. What are the important features of a capitalist economy?

Ans. Features of capitalist economy are:

(*a*) Private ownership of land and capital.
(*b*) Profit is the only motive.
(*c*) Free play of the market forces of demand and supply.
(*d*) Government looks after growth, stability and social justice in the economy.

Q3. Describe the four major sectors in an economy according to the macroeconomic point of view.

Ans. Four sectors of an economy are:

(*a*) Households–The families or individuals who supply factors of production to the firms and buy goods and services from the firms.

(*b*) Firms–Economic units which carry out production of goods and services with the help of factors of production.

(*c*) Government–The state which maintains law and order in the country, imposes taxes and fines, makes laws and works for well-being of the citizens of the economy.

(*d*) External Sector–It refers to the economic transactions of the domestic country with the rest of the world.

Q4. Describe the Great Depression of 1929.

Ans. The Great Depression took place in 1929 which adversely affected the developed economies of Europe and North America. It continued for 10 years. There was extreme fall in aggregate demand due to fall in income, which led to a vicious circle of poverty.

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Q5. What are the four factors of production and what are the remunerations to each of these called?

Ans.

Four factors of Production	**Remuneration Paid**
Land	Rent
Labour	Wages
Capital	Interest
Enterprise	Profit

Q6. Why should the aggregate final expenditure of an economy be equal to the aggregate factor payments? Explain.

Ans. The sum of final expenditures in the economy must be equal to the income received by all the factors of production taken together (final expenditure is the spending on final goods, it does not include spending on intermediate goods). This follows from the simple idea that the revenues earned by all the firms put together must be distributed among the factors of production as salaries, wages, profits, interest earnings and rents.

Q7. Distinguish between stock and flow. Between net investment and capital which is a stock and which is a flow? Compare net investment and capital with flow of water into a tank.

Ans. The main differences between stock and flow are:

(*a*) Stock is related to a point of time whereas flow is related to a period of time.
(*b*) A stock is a quantity measurable at a particular point of time whereas a flow is a quantity which is measured over a specific period of time.
(*c*) Stock has no time dimension whereas flow has time dimensions.
(*d*) National capital is a stock variable whereas national income is a flow variable.

Net investment is a flow whereas capital is a stock. Amount of water in a tank at a particular point of time is a stock concept, whereas amount of water flowing into it is a flow concept.

Q8. What is the difference between planned and unplanned inventory accumulation? Write down the relation between change in inventories and value added of a firm.

Ans. Planned Inventory. It refers to changes in the stock of inventories which has occured in a planned way. In a situation of planned inventory accumulation, firm will plan to raise its inventories.

Unplanned Inventory. It refers to change in the stock of inventories which has occured in an unexpected way. In a situation of unplanned inventory accumulation, due to unexpected fall in sales, the firm will have unsold stock of goods.

Gross value added of a firm (GVA) ≡ Gross value of output produced by the firm (Q) − Value of intermediate goods used by the firm (Z)

or GVA ≡ Value of sales by the firm (V) + Value of change in inventories (A) − (Z).

Q9. Write down the three identities of calculating the *GDP* of a country by the three methods. Also briefly explain why each of these should give us the same value of *GDP*.

Ans. National Income ≡ National Product ≡ National Expenditure. Each one will give the same result. The only difference is that with product methods, *NI* is calculated at production or creation level with income method *NI* is measured at distribution level and with expenditure method, *NI* is measured at disposal level.

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Q10. Define budget deficit and trade deficit. The excess of private investment over saving of a country in a particular year was ₹ 2,000 crores. The amount of budget deficit was (–) ₹ 1,500 crores. What was the volume of trade deficit of that country?

Ans. Budget deficit. It measures the amount by which the government expenditure exceeds the tax revenue earned by it.

Budget Deficit = $G - T$

Trade deficit: It measures the amount of excess imports expenditure over the export revenue earned by the country.

Trade Deficit = $M - X$
given $G - T$ = (–) ₹ 1500 crores
$I - S$ = ₹ 2000 crores
Trade deficit = $[I - S] + [G - T]$
= [2000] + [– 1500]
= ₹ 500 crores.

Q11. Suppose the *GDP* at market price of a country in a particular year was ₹ 1,100 crores. Net Factor Income from Abroad was ₹ 100 crores. The value of Indirect taxes – Subsidies was ₹ 150 crores and National Income was ₹ 850 crores. Calculate the aggregate value of depreciation.

Ans. National Income (or NNP_{FC}) = GDP_{MP} – Depreciation + Net factor income from abroad – Net Indirect taxes
850 = 1100 – Depreciation + 100 – 150
Depreciation = 1100 + 100 – 150 – 850
∴ Depreciation = ₹ 200 crores.

Q12. Net National Product at Factor Cost of a particular country in a year is ₹ 1,900 crores. There are no interest payments made by the households to the firms/ government, or by the firms/government to the households. The Personal Disposable Income of the households is ₹ 1,200 crores. The personal income taxes paid by them is ₹ 600 crores and the value of retained earnings of the firms and government is valued at ₹ 200 crores. What is the value of transfer payments made by the government and firms to the households?

Ans. *PDI* = NNP_{FC} – Value of retained earnings of the firms and the government + Value of transfer payments – personal taxes
1200 = 1900 – 200 + Value of transfer payments – 600
Value of transfer payments = 1200 + 200 + 600 – 1900
= ₹ 100 crores.

Q13. From the following data, calculate Personal Income and Personal Disposable Income.

Items	₹ (*in crore*)
(*a*) Net Domestic Product at factor cost	8,000
(*b*) Net Factor Income from abroad	200
(*c*) Undistributed Profit	1,000

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(*d*) Corporation Tax	500
(*e*) Interest Received by Households	1,500
(*f*) Interest Paid by Households	1,200
(*g*) Transfer Income	300
(*h*) Personal Tax	500

Ans. Personal Income = $(a) + (b) + (e - f) + (g) - (d)$

$= 8000 + 200 + (1500 - 1200) + 300 - 500$

$= 8000 + 200 + 300 + 300 - 500$

$= 8800 - 500 = ₹\ 8{,}300$ crores

Personal Disposable Income = Personal Income − Personal tax

$= 8300 - 500$

$= ₹\ 7{,}800$ crores.

Q14. In a single day Raju, the barber, collects ₹ 500 from haircuts; over this day, his equipment depreciates in value by ₹ 50. Of the remaining ₹ 450, Raju pays sales tax worth ₹ 30, takes home ₹ 200 and retains ₹ 220 for improvement and buying of new equipment. He further pays ₹ 20 as income tax from his income. Based on this information, complete Raju's contribution to the following measures of income (*a*) Gross Domestic Product (*b*) *NNP* at market price (*c*) *NNP* at factor cost (*d*) Personal income (*e*) Personal disposable income.

Ans. (*a*) *GDP* = ₹ 500

(*b*) NNP_{MP} = *GDP* − Dep. = 500 − 50

= ₹ 450

(*c*) NNP_{FC} = *NNP* − Sales tax = 450 − 30

= ₹ 420

(*d*) *PI* = NNP_{FC} − Retained earnings

= 420 − 220

= ₹ 200

(*e*) *PDI* = *PI* − Income tax = 200 − 20

= ₹ 180

Q15. The value of the nominal *GNP* of an economy was ₹ 2,500 crores in a particular year. The value of *GNP* of that country during the same year, evaluated at the prices of same base year, was ₹ 3,000 crores. Calculate the value of the *GNP* deflator of the year in percentage terms. Has the price level risen between the base year and the year under consideration?

Ans. *GNP* deflator $= \frac{\text{Nominal } GNP}{\text{Real } GNP} \times 100$

$= \frac{2500}{3000} \times 100 = 83.3\%$

No, the price level has not risen between the base year and the year under consideration. In fact, it has fallen.

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Q16. Write down some of the limitations of using *GDP* as an index of welfare of a country.

Ans. (*i*) The national income figures give no indication of the population, skill and resources of the country. A country may be having a high national income but it may be consumed by the increasing population, so that the level of people's well-being or welfare remains low.

(*ii*) Similarly, a high National Income may be due to *greater area* of the country or due to the **concentration of some resources** in one particular country. A typical example of the latter is the Arab states who have a high national income due to their oil resources but mass of people is one of the most backward in the world.

(*iii*) National income does not consider the **level of prices** in the country. People may be having incomes but due to the high prices they might not be able to enjoy a high standard of living.

(*iv*) High national income of a country may be due to large contributions made by a **few industrialists.** While these exceptional few cases enjoy a high standard of living, the level of economic well-being of the people may be indeed low. Thus, if a small section of the population owns a large share in the *GNP* leaving a smaller percentage of the *GNP* to be shared by a greater number of people, economic growth will not reach the poorest of the poor sections of an economy.

(*v*) Another factor not taken into account by national income is the **level of unemployment** in the country. People cannot be said to be enjoying a high standard of living if the level of unemployment is high. Economic well-being of the people will remain low unless unemployment is removed.

(*vi*) National income does not show the **composition of *output*.** If product mix has more of war goods like explosives, guns, bombs, then destruction will increase and welfare will reduce. Similarly, increase in the national income may be purely due to an increase in the goods which are not socially desirable such as drugs like smack, brown sugar, etc. This will surely not enhance economic welfare of the people. Moreover, if the share of wage goods in total national product does not increase, economic growth will not lead to economic welfare of the masses.

(*vii*) With rise in national income or economic activity, there will be rise in industrialisation and urbanisation. This will raise pollution of air, water and noise. There will be more accidents, shortage of water, housing problems, etc. In other words, with rise in national income there will be **ecological degradation** which will reduce welfare of the people.

Thus, we conclude that *GNP* and economic welfare are not positively related. An increase in *GNP* does not bring about a corresponding increase in economic welfare.

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Money and Banking

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This Unit Contains

4. Money
5. Banking

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Money



Chapter Scheme

4.1 Barter Exchange—Meaning and Inconveniences
4.2 Evolution of Money
4.3 Meaning and Functions of Money
4.3.1 Primary Functions
4.3.2 Secondary Functions
4.4 Money Supply
4.4.1 Meaning of Money Supply
4.4.2 Components of Money Supply
4.4.3 Measures of Money Supply
■ Points to Remember
■ Test Your Knowledge
■ Answers to MCQs

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4.1 BARTER EXCHANGE—MEANING AND INCONVENIENCES

Barter exchange is direct exchange of commodity for commodity. It is also called C-C economy (*i.e.*, commodity for commodity).

The *trading costs* of barter exchange depends upon the size of the group—larger the size of the group, more will be trading cost. Trading costs are cost of engaging in trade. It has **two components:**

(*a*) **Search Cost.** It is the cost of searching the person who will buy your good and give you the good which you want.

(*b*) **Disutility of Waiting.** It is the time and effort required in the search period. Longer the time period spent on searching the required person, more will be search cost and disutility of waiting. A solution to this problem is to find commonly accepted good as a medium of exchange. In the past, goods like livestock, seashells, pearls, etc. have been used as a common medium of exchange.

The major problems of barter exchange are:

1. **Lack of Double Coincidence of Wants.** It is difficult to come across double coincidence of want. It means that it is very difficult for owner of some goods and services to find someone else who wanted both his goods and services more than anything else and possessed that good or service that our trader wanted more than anything else.
2. **Lack of Divisibility.** In commodity exchange, difficulty of dividing the commodity arises. *For example,* if car is to be exchanged for a scooter, then car cannot be divided. Similarly, animals cannot be divided into smaller units.
3. **Difficulty in Storing Wealth (or generalised purchasing power).** It is difficult to store potatoes, tomatoes, grains, etc. So, in case of commodities, it is difficult for people to store their purchasing power.

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4. **Absence of Common Measure of Value.** When thousands of goods are produced and exchanged, there should be unlimited exchange ratios. In fact, each good must have many different values depending upon the commodity in exchange. For example, 1 pair of socks can be exchanged for 1 kg. of wheat, but 10 pair of socks might be the right exchange value for 1 pair of shoes. It **limits** the amount of trade. No accounting system is possible because of absence of a common unit to measure the value of goods and services.
5. **Lack of Standard of Deferred Payment.** With commodity exchange, it is not possible to have a satisfactory unit of future payments like salaries, interest, loan, etc.

4.2 EVOLUTION OF MONEY

Money is the most useful and necessary invention. Money is anything that can serve as a medium of exchange. Historically, it has undergone a long process of evolution.

1. **Commodity Money.** Human beings exchanged goods for goods called barter exchange. All sorts of commodities like seashells, tobacco, cow, leather, pearls, precious stones, salt, etc. have been used as a medium of exchange. They were called commodity money.
2. **Metallic Money.** Up to first half of the 18th century, the medium of exchange were metals, particularly gold and silver. Gold and silver found prominence for the following reasons:
   (*a*) Gold and silver were widely accepted in monetary transactions like buying and selling, borrowing and lending, for storing wealth, etc.
   (*b*) They were in limited supply.
   (*c*) They were durable (nearly non-perishable).
   (*d*) Gold and silver could easily be divided into monetary units.

But after 1930s use of metallic money as a medium of exchange was discarded because:

   (*a*) The world's production of gold and silver was not enough to match the requirements of increasing volume of internal and external trade.
   (*b*) Even if supply was sufficient, inconvenience in handling large transactions, lack of safety during transportation of metals, etc. came in the way of using gold and silver as a prominent medium.

3. **Paper Money.** From 1930s onward, most countries are using paper currency as a prominent and nearly exclusive, medium of exchange. It is because of phenomenal rise in the volume of transactions needing more and more of money.
4. **Bank or Credit Money.** Together with paper money, people have started using credit money like cheques, drafts, credit cards, etc. Plastic money in the form of debit cards is also an attractive and easy medium of exchange. Bank money has the advantage that it reduces risk, convenient form of money and is durable.

4.3 MEANING AND FUNCTIONS OF MONEY

Meaning of Money. It is very difficult to give a precise meaning of money which will cover all its aspects. Many definitions have been suggested by various economists. Most of the definitions are based on different functions performed by money. Thus, it is

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impossible to give a comprehensive, accurate and universal definition of money.

Thus, money means:

Money is something which is freely used and generally accepted as a medium of exchange and/or as a unit of account.

Functions of Money

Money has made economic life systematic and organised by performing various functions. The following couplet brings out the major functions of money:

"Money is a matter of function four:

A medium, a measure, a standard, a store."

As this couplet reveals, money performs four major functions, which are:

(*a*) Money is a *medium* of exchange.

(*b*) Money is a *measure* of value.

(*c*) Money is a *standard* of deferred payments.

(*d*) Money is a *store* of value.

Prof. Kinley classified the functions of money into three groups:

(*i*) Primary functions

(*ii*) Secondary functions, and

(*iii*) Contingent functions.

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4.3.1 Primary Functions

Money must perform primary functions in an economic system irrespective of time and place. Primary function of money are:

(*a*) Medium of Exchange. This is the central function of money. For performing this function, money should have general acceptability. Money as a medium of exchange divides the exchange transactions into two parts, namely, *sale* and *purchase*. This function of money removes the difficulty of double coincidence of wants. Money facilitates sale and purchase independent of each other.

(*b*) Measure of Value/Unit of Account. Money serves as a unit of account. As Crowther puts it, "Money acts as a standard measure of value to which all other things can be compared." Money measures the value of economic goods. Money works as a common denominator into which the values of all goods and services are expressed. When we express the value of a commodity in terms of money, it is called *price* and by knowing prices of the various commodities, it is easy to calculate exchange ratios between them.

4.3.2 Secondary Functions

Secondary functions of money are derivatives of the primary functions. There are three secondary functions performed by money. These are:

(*a*) Store of Value. Wealth can be conveniently stored in the form of money. Money can be stored without loss in value. Savings are secured and can be used whenever there is a need.

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In this way, money acts as a bridge between the present and the future. Money means goods and services. Thus, money serves as a store of value.

(*b*) **Standard of Deferred Payments.** Credit has become the life and blood of a modern capitalist economy. In millions of transactions, instant payments are not made. The debtors make a promise that they will make payment on some future date. In those situations money acts as a standard of deferred payments. It has become possible because money has general acceptability, its value is stable, it is durable and homogeneous.

(*c*) **Transfer of Value.** With money, purchasing power can be transferred from one person to another and from one place to another, up to any amount, due to its general acceptability. Money can affect such transfers easily, quickly and efficiently.

4.4 MONEY SUPPLY

4.4.1 Meaning of Money Supply

The stock of money held by the public at a point of time in an economy is referred to as the money supply. (Public means private individuals and business firms. It excludes the government, the central bank and the commercial banks.) The money supply of an economy at any point of time is the total amount of money in circulation.

There are two main components of supply of money:

1. **Currency Component.** It consists of coins and currency (or paper) notes.
2. **Deposit Component.** It consists of the bank deposits, against which cheques are issued.

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Items Excluded from Money Supply

Items not included in money supply of a country are:

(*a*) The amount of coins and currency held by the commercial banks as their cash reserves.

(*b*) The stock of gold held with the central bank.

(*c*) Cash held by the government in treasury and the central bank.

4.4.2 Components of Money Supply

As discussed above there are two main components of money supply, *i.e.*, currency (or fiat money) component and deposit component.

1. **Currency Component.** It consists of coins and paper currency.

   (*a*) **Coins.** Coins are made up of metal. The metallic coins are issued by the monetary authority of the country, *i.e.*, central bank with the central government of the country. The metal used in coins has no significance and these coins are used as token coins since their face value is much higher than their intrinsic value. In India, today coins of ₹ 1, ₹ 2, ₹ 5 and ₹ 10 are in use.

   (*b*) **Paper Currency.** Paper currency or currency notes are the most important part of the money supply. The central bank in every country has monopoly right of issuing currency notes. In India, one rupee note is issued by the Ministry of Finance,

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Government of India, while the remaining notes of higher denominations or coins are issued by the central bank, *i.e.*, Reserve Bank of India. The central bank is permitted to issue notes to any extent provided a minimum reserve in the form of gold and foreign securities. In our country, RBI has to keep reserve of ₹ 200 crores in which there is gold bullion of ₹ 115 crores and foreign securities of ₹ 85 crores.

2. **Deposit Component or Demand Deposits.** Demand deposits are also the most important component of the money supply. These are the money deposits made by the depositor or owner of the deposit to the bank. Now bank is agreed to honour such demands or pay money on demand at any time and to whomsoever the owner of the deposit may wish. For this purpose the people use cheques to meet financial obligations.

4.4.3 Measures of Money Supply

From April 1977, following the recommendations of its Second Working Group on Money Supply, the Reserve Bank of India (RBI) has presented four measures of money supply namely M_1, M_2, M_3 **and** M_4. These are defined below in decreasing order of their liquidity:

M_1 **Measurement.** M_1 is narrow definition of money. M_1 is most liquid and easiest for transactions. It is measured on a **specific day** (that is, at a point of time).

$$M_1 = C + DD + OD$$

where,

C = Currency held by public

DD = Net demand deposits of the bank (Net demand deposits do not include inter-banking claims)

OD = Other deposits held with the RBI. These are deposits of quasi-government institutions like Industrial Development Bank of India, International Monetary Fund, World Bank, etc. with the RBI.

M_2 **Measurement.** It is also narrow money. Besides all the components of M_1, it also includes savings of the people with the post offices.

Thus,

$$M_2 = M_1 + \text{Savings of the people with Post Offices.}$$

M_3 **Measurement.** M_3 is broad money. It is most commonly used measure of money supply. Besides all the components of M_1, it includes, (net) time deposits (or fixed deposits/ or term deposits) of the people with the commercial banks.

Thus,

$$M_3 = M_1 + \text{Net time deposits with the Commercial Banks.}$$

Aggregate Monetary Resources of the Country

If money supply in the country is measured using M_3 measure, what we find is called 'aggregate monetary resources' of the country.

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M_4 Measurement. M_4 concept of money supply is still broader, it is broader even than M_3. Besides all the components of M_3, it also includes savings with the post offices (other than in the form of National Saving Certificate.)

Thus,

M_4 = M_3 + **Savings with the Post Offices (other than in the form of National Saving Certificate)**

Fig. 4.1 summarises components of different measures of money supply.

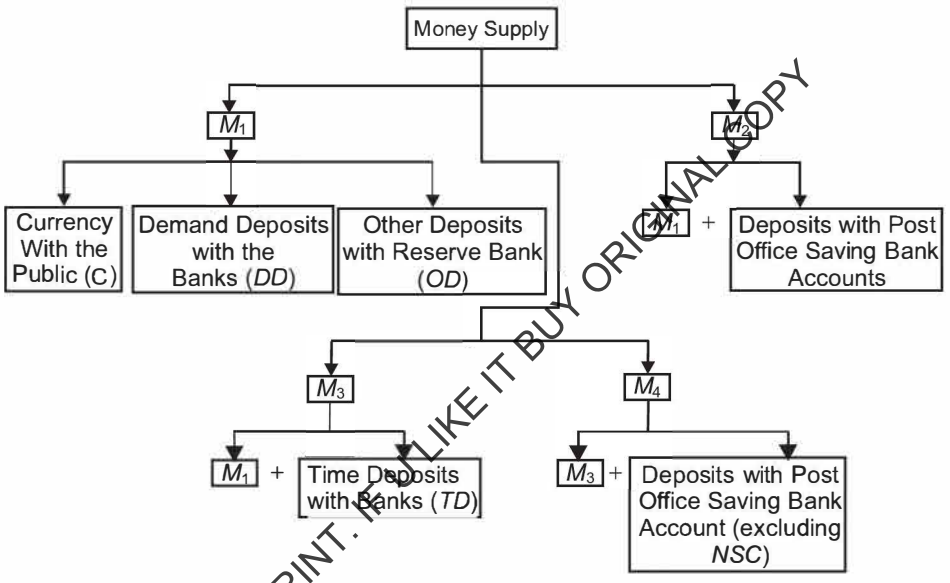


Fig. 4.1 Measures of Money Supply

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Points to Remember

Barter Exchange

Before money came into use, the exchange took place through **barter system.** The barter system implies the direct exchange of goods for goods without the use of money.

Barter system involves difficulties and drawbacks (or inconveniences) which are:

(*a*) lack of double coincidence of wants,

(*b*) lack of a common measure of value,

(*c*) lack of standard of deferred payments, and

(*d*) lack of store of value.

Evolution of Money

Money is something which is generally accepted as a medium of exchange. It is one of the most basic and significant inventions of mankind.

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Money is one of the greatest inventions of our time. We can talk of evolution of money in terms of the prominence of the medium of exchange. Historically, all sorts of things like animals, agricultural produce, metals were being used as money. Today, it is prominently paper money, *i.e.,* the currency notes which is used and as a medium of exchange.

Functions of Money

Money performs four specific functions, each of which overcome one of the difficulties of barter. The functions of money are to serve as (*a*) a unit of value, (*b*) a medium of exchange, (*c*) a standard of deferred payment, and (*d*) a store of value.

The first two functions, *i.e.,* a unit of value and a medium of exchange are usually called the **primary** functions of money. The last two functions, *i.e.,* a standard of deferred payment and a store of value are called **secondary** functions because they are derived from the primary functions.

Money works as a **measure of value.** The values of different commodities can be expressed through money. Money acts as a **medium of exchange.** People can exchange goods and services through the medium of money.

Money acts as a **standard of deferred payments.** Future transactions can be carried on in terms of money. The loans which are taken at present can be repaid in money in future. Money acts as a **store of value.** Value (or savings) can be stored in the form of money. The value of money is more or less stable.

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Definition of Money

Money is anything which is generally acceptable as medium of exchange by people and it acts as common measure of value, store of value and standard of deferred payment.

Money Supply

Money is classified into two parts: (*i*) Narrow definition and (*ii*) Broad definition.

1. The **narrow** definition of money is based upon its medium of payment function. Anything which is used as a medium of payment is included in the category of money. Thus, narrow definition of money included in it the currency and demand deposits of banks, *i.e.,*

$$M = C + DD.$$

2. The **broad** definition of money is based upon store of value function. Anything which have a high degree of "moneyness" and are widely used as a store of value is included in the category of money. Thus, the broad definition of money includes in it the currency, demand deposits of banks and saving and time deposits of banks and post offices, *i.e.,*

$$M = C + DD + SD + TD.$$

Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. What is barter? (*Delhi, Foreign 2007*)
2. Mention two drawbacks (or difficulties) of barter system.
3. Define money. (*Delhi 2009; AI 2011, 12*)
4. What is meant by money? (*Delhi, AI, Foreign 2007*)
5. Name the primary functions of money.
6. Name the secondary functions or derivative functions of money.

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7. What do we mean by fiduciary money?
8. What is money supply?
9. What are demand deposits? (*AI 2008, 12; Foreign 2011; Delhi 2012, 2014*)
10. State the two components of money supply. (*Sample Paper 2009*)
11. State the components of money supply. (*Foreign 2010; Delhi 2010*)
12. Give the meaning of money. (*AI 2010*)
13. Define money supply. (*Delhi 2011*)
14. What is bank money? (*Foreign 2012*)
15. What is included in money supply? (*Delhi 2012*)
16. What are demand deposits? (*Delhi, Foreign 2013, Delhi 2014*)
17. State the components of supply of money. (*AI, Foreign 2013*)
***18.** What are time deposits? (*Foreign 2013, AI 2014*)

Multiple Choice Questions

1. India is on _____ currency standard:
(*a*) Paper (*b*) Metal (*c*) Foreign (*d*) Dollar

2. RBI has the sole right to issue currency notes other than:
(*a*) ₹ 5 note (*b*) ₹ 10 note (*c*) ₹ 1 note (*d*) None of the above

3. Money supply is defined as:
(*a*) Stock of money held by public at a point of time in an economy
(*b*) Flow of money held by public at a point of time in an economy
(*c*) Flow of money held by government at a point of time in an economy
(*d*) Stock of money held by government at a point of time in an economy

4. Money supply consists of:
(*a*) Currency (*b*) Deposit
(*c*) Both currency and deposit (*d*) None of the above

5. What is excluded from money supply?
(*a*) Gold held with Central Bank
(*b*) Coins and currency held by commercial banks as their cash reserves
(*c*) Cash held by the government in treasury
(*d*) All of the above

6. C + DD + OD = _____ ?
(*a*) M_1 (*b*) M_2 (*c*) M_3 (*d*) M_4

7. Which measure of money supply lays stress on medium of exchange function of money?
(*a*) M_1 (*b*) M_2 (*c*) M_3 (*d*) M_4

*Please see the answer at the end of exercises.

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8. Which measure of money supply lays stress on the store of value function of money?

(*a*) M_1 (*b*) M_2 (*c*) M_3 (*d*) M_4

Short Answer Type Questions **(*3/4 Marks*)**

1. What is a barter system? Explain the drawbacks of barter system.

2. State the main functions of money. (*AI 2007*; *Delhi 2008*)

or

Explain the 'medium of exchange' function of money. (*AI 2007*, *08*; *Delhi 206*, *07, 09*)

or

Explain the 'unit of value' function of money. (*Delhi 2005*; *AI 2006*; *Foreign 2006*, *07*, *08*)

or

Explain the 'standard of deferred payments' function of money (*Delhi 2007; AI 2012*)

or

Explain the 'store of value' function of money. (*AI 2009*; *Delhi 2006*, *06*, *07*; *Foreign 2008*)

3. Explain any two problems of barter system. How does money help in removing these drawbacks? (*Foreign 2009*)

or

Explain any one problem faced in the barter system. How has money solved this problem? (*AI 2006*)

4. How money can be defined? (*Foreign 2007*)

5. Explain demand deposits.

6. How does currency notes issue in India?

7. What is the measure of money supply in India?

8. Describe the evolution of money. (*AI, Foreign 2009*)

9. How does money solve the problem of double coincidence of wants? (*Sample Paper 2009*)

10. Explain any two functions of money. (*Foreign 2010*)

11. Explain the significance of the 'Store of Value' function of money. (*Delhi 2012*)

12. Explain the 'unit of account' function of money. (*Foreign 2012*)

13. Explain the problem of double coincidence of wants faced under barter system. How has money solved it? (*Delhi 2013*)

14. Explain the 'medium of exchange' function of money. (*AI, Foreign 2013*)

15. What are externalities? Give an example of a positive externality and its impact on welfare of the people (*AI 2014*)

16. Explain the significance of 'store of value' function of money. (*Delhi 2014*)

or

Explain the significance of 'medium of exchange' function of money.

17. Define money supply and explain its components. (*Delhi 2014*)

18. Explain the significance of the 'Unit of Account' function of money. (*AI 2014*)

or

Explain the significance of the 'Standard of Deferred Payment' function of money.

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Long Answer Type Questions **(*6 Marks*)**

1. What do you mean by Barter System? What are its major drawbacks? Explain.

2. Define Money. Explain its main functions.

3. Explain the various components of money supply.

4. Explain any two functions of money. (*Delhi, AI 2012*)

Answers

Very Short Answer Type Questions

***18.** They are the deposits which have fixed period of maturity.

Multiple Choice Questions

1. (*a*) **2.** (*c*) **3.** (*a*) **4.** (*c*) **5.** (*d*) **6.** (*a*) **7.** (*a*) **8.** (*c*)

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Banking



Chapter Scheme

5.1 Definition of a Bank
5.2 Meaning of Commercial Bank
5.3 Money Creation by Commercial Banks
5.4 Meaning of Central Bank
5.5 Functions of a Central Bank
5.6 Comparison Between Central Bank and Commercial Bank
■ Points to Remember
■ Test Your Knowledge
■ Answers to MCQs

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5.1 DEFINITION OF A BANK

Bank means an institution which receives funds from the public and gives loans and advances to those who need them. Banking is the life blood of modern commerce and trade. The Banking Companies Act, 1949 defines a banking company as one which transacts the business of banking in any state of India and in the world.

Banking has been defined as accepting, for the purpose of lending or investment, deposits of money from the public which are payable on demand or withdrawable by cheque, draft, order or otherwise. Thus, banks act as a bridge between the users of capital (investors) and those who save (savers). They activate the idle resources of the community and use them for productive purposes. Thus, two essential functions of banks that make them Financial Institutions (FIs) are:

- accepting chequable deposits from the public and
- lending

Look at these examples:

Post Office Savings Bank is not a bank because it accepts deposits but does not lend. Financial institutions (FIs) like LIC, UTI, IDBI, etc. are not banks. Differences between banks and financial institutions are:

1. Financial institutions lend but do not accept chequable deposits.
2. Financial institutions do not perform agency functions and general services. But banks perform agency and general services.
3. Financial institutions do not create credit. But banks have the capacity to add to the total money supply of an economy by means of **credit creation.**

5.2 MEANING OF COMMERCIAL BANK

A Commercial Bank is that financial institution which accepts deposits from the people, gives loan for various purposes and performs various other functions.

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5.3 CREDIT OR MONEY CREATION BY THE COMMERCIAL BANKS

Meaning

Money is anything usable for undertaking transactions, *i.e.*, receipts and payments. The stock of such money in an economy is called Money supply. The basic measure of money supply has two components: currency with public and dema nd deposits in commercial banks. The currency is created by the central bank (Reserve Bank of India in India) and is called **High Powered Money**. Demand deposits are created by the commercial banks and are called bank money.

Commercial banks receive deposits from the public. The depositors are free to withdraw, in part or in full, their deposit amounts by writing cheques. The banks use the money in these deposits to give loans. These functions of the commercial banking system are the basis of deposit creation. How much are the deposits created is determined by the amount of initial deposits by the public and the Legal Reserve Ratio. The quantitative outcome is called money multiplier. Let us explain the process of money creation and the measure of money multiplier. Note that money creation is also called **'deposit creation'** or **'credit creation'**.

The Process of Money Creation

Let us assume that the entire commercial banking system is one unit. Let us call this one unit simply 'banks'. Let us also assume that all receipts and payments in the economy are routed through the banks. One who makes payment does it by writing cheque. The one who receives payment, deposits the same in his deposit account.

Suppose initially people deposit ₹ 100. The banks use this money for giving loans. But the banks cannot use the whole of deposit for this purpose. **It is legally compulsory for the banks to keep a certain minimum fraction of these deposits as cash. The fraction is called the Legal Reserve Ratio (*LRR*)**. The *LRR* is fixed by the central bank. It has two components. A part of the *LRR* is to be kept with the Central Bank and this part of the ratio is called the **Cash Reserve Ratio**. The other part is kept by the banks themselves and is called the **Statutory Liquidity Ratio**.

Why are the banks required to keep only a fraction of deposits as cash reserves? What will banks do if the demand for cash withdrawals is more than cash reserves at some point of time? There are two reasons. Firstly, the banking experience has revealed that not all depositors approach the banks for withdrawal of money at the same time and also that normally they withdraw a fraction of deposits. Secondly, there is a constant flow of new deposits into the banks. Therefore, to meet the daily demand for withdrawal of cash, it is sufficient for banks to keep only a fraction of deposits as cash reserve.

Let us now explain the process. Suppose the initial deposits in banks is ₹ 100 and the *LRR* is 20 per cent. Further suppose that banks keep only the minimum required ₹ 20 as cash reserve, no more no less. Banks are now free to lend the remainder ₹ 80. Suppose they lend ₹ 80. What banks do is to open deposit accounts in the names of the borrowers who are free to withdraw the amount whenever they like. Suppose they withdraw the whole of amount for making payments.

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Now, since all the transactions are routed through the banks, the money spent by the borrowers comes back into the banks in the deposit accounts of those who have received this payment. This increases demand deposits in banks by ₹ 80. It is 80 per cent of the initial deposit. These deposits of ₹ 80 have resulted on account of loans given by the banks. In this sense, the banks are responsible for money creation. With this round, increase in total deposits are now ₹ 180 (= 100 + 80).

When banks receive new deposits of ₹ 80, the banks keep 20 per cent of it as cash reserves and use the remaining ₹ 64 for giving loans. The borrowers use these loans for making payments. The money comes back into the accounts of those who have received the payments. Bank deposits again rise, but by a smaller amount of ₹ 64. It is 80 per cent of the last deposit creation. The total deposits now increase to ₹ 244 (= 100 + 80 + 64). The process does not end here.

The deposit creation continues in the above manner. The deposits go on increasing round after round but each time only 80 per cent of the last round deposits. At the same time cash reserves go on increasing, each time 80 per cent of the last cash reserve. The deposit creation comes to an end when total cash reserves become equal to the initial deposit. The total deposit creation comes to ₹ 500, five times the initial deposit as shown in the table below:

Deposit Creation By Commercial Banks

	Deposits (₹)	Loans (₹)	Cash Reserves (*LRR* = 0.2)
Initial	100	80	20
Round I	80	64	16
Round II	64	51.20	12.80
–	–	–	–
–	–	–	–
–	–	–	–
Total	500	400	100

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Money Multiplier

How many times the total deposits would be of the initial deposit is determined by the *LRR*. The multiple is called the money or deposit multiplier. It is given by the formula:

$$\text{Money multiplier} = \frac{1}{LRR}$$

In the above illustration, *LRR* is 0.2 therefore,

$$\text{Money multiplier} = \frac{1}{0.2} = 5$$

The total money creation is thus:

$$\text{Money creation} = \text{initial deposit} \times \frac{1}{LRR} = 100 \times \frac{1}{0.2} = 500$$

Note that lower the *LRR*, higher the money multiplier and more the money creation. If the *LRR* = 0.1, the money multiplier is 10(1/0.1). If the *LRR* is 0.4, the money multiplier is 2.5 (1/0.4).

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5.4 MEANING OF CENTRAL BANK

Every country has an apex institution which is a leader of the money market. It plays a leading role in organising, running and developing the monetary and financial system of a country. Its special responsibility is to design and conduct the monetary and credit policies. This type of a unique institution is known as **Central Bank** of a country. It occupies a central pivotal position in the monetary and banking structure of a country. As compared to other banking institutions, the central bank is vested with special powers and can influence credit conditions.

Central bank is the principal banking and monetary institution of a country which has the monopoly to issue notes.

5.5 FUNCTIONS OF A CENTRAL BANK (RBI)

The central bank is the apex institution of a country's monetary system. The design and the control of the country's monetary policy is its main responsibility. India's central bank is the **Reserve Bank of India.**

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1. Bank of Issue

The Central Bank is the sole authority for the issue of currency in the country. All the currency issued by the central bank is its monetary liability. This means that the Central Bank is obliged to back the currency with assets of equal value. These assets usually consist of gold coin, gold bullion, foreign securities, and the domestic government's local currency securities. It follows a **minimum reserve system**, that is, minimum backing of ₹ 200 crores. Out of which ₹ 115 crores worth of gold and ₹ 85 crores worth of foreign securities are kept under the Central Bank.

The country's Central Government is usually authorised to borrow money from the central bank. Government does this, by selling local currency securities to the central bank. The effect of this is to increase the supply of money in the economy. When the central bank acquires these securities, it issues currency. This authority of the government gives its flexibility to monetise its debt. **Monetising the government's** debt (called public debt) is the process of converting its debt (whether existing or new), which is a non-monetary liability, into central bank currency, which is a monetary liability.

Putting and withdrawing currency into and from circulation is also the job of its banking department. ***For example***, when the government incurs a deficit in its budget, it borrows from the central bank. This is done by selling treasury bills to the central bank, the latter paying for the bills by drawing down its stock of currency or printing currency against equal transfer of the said securities. The government spends the new currency and puts it into circulation.

2. Banker to the Government

The central bank acts as a banker to the government—both Central as well as State governments. It carries out all the banking business of the government and the government keeps its cash balances on current account with the central bank.

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As the banker to the government, the central bank accepts receipts and makes payments for the government, and carries out exchange, remittance and other banking operations. The central bank also provides short-term credit to the government, so that the government can meet any shortfalls in receipts over disbursements. The government borrows money by selling treasury bills to the central bank. The government carries on short-term borrowing by selling adhoc treasury bills to the central bank.

As the Government's Banker, the central bank also has the responsibility of managing the public debt. This means that the central bank has to manage all new issues of government loans.

The central bank also advises the government on banking and financial matters.

3. Bankers' Bank

As the banker to banks, the Central Bank holds a part of the cash reserves of banks, lends them short-term funds and provides them with centralised clearing and remittance facilities. The banks are required to deposit a stipulated ratio of their net total liabilities (the *CRR*) with the Central Bank. The purpose of this stipulation is to use these reserves as an instrument of monetary and credit control. In addition to this the bank holds excess reserves with the Central Bank to meet any clearing drains due to settlement with other banks or net withdrawals by their account holders. The pool of funds with the Central Bank serves as a source from which it can make advances to banks temporarily in need of funds, acting in its capacity as lender of last resort.

The Central Bank supervises, regulates and controls the commercial banks. The regulation of banks may be related to their licensing, branch expansion, liquidity of assets, management, amalgamation (merging of banks) and liquidation (the winding up of banks). The control is exercised by periodic inspection of banks and the returns filled by them.

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4. Controller of Credit (Credit Control Policy of RBI)

The various **credit policy** or **monetary instruments** used by the Central Bank of the country are:

(*a*) Bank Rate Policy. The bank rate is the rate at which the central bank lends funds as a 'lender of last resort' to banks, against approved securities or eligible bills of exchange. The effect of a change in the bank rate is to change the cost of securing funds from the central bank. An increase in the bank rate increases the costs of borrowing from the central bank. This will reduce the ability of banks to create credit. A rise in the bank rate will then cause the banks to increase the rates at which they lend. This will then discourage businessmen and others from taking loans, thus reducing the volume of credit. A decrease in the bank rate will have the opposite effect. In actual practice, however, the effectiveness of bank rate policy will depend on (*a*) the degree of banks' dependence on borrower reserves (positive

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relationship), (*b*) the sensitivity of banks' demand for borrowed funds to the difference between the bank lending rate and their borrowing rate (positive relationship), (*c*) the extent to which other rates of interest in the market change and (*d*) the state of supply and demand of funds from other sources.

(*b*) Open Market Operations. *OMO* is the buying and selling of government securities by the Central Bank from/to the public or banks. It does not matter whether the securities are bought or sold to the public or banks because ultimately the amount will be deposited in/or transferred from some banks. The sale of government securities to banks will have the effect of reducing their reserves. When the bank gives the central bank a cheque for the securities, the central bank collects the amounts by reducing the bank's reserves by the particular amount. This directly reduces the bank's ability to give credit and therefore decrease the money supply in the economy. When the central bank buys securities from the banks, it gives the banks a cheque drawn on itself in payment for the securities. When the cheque clears, the central bank increases the reserves of the bank by a particular amount. This directly increases the bank's ability to give credit and thus increase the money supply. Successful conduct of *OMO* as a tool of monetary policy requires first that a well functioning securities market exists. If banks regularly and routinely resort to keeping excess reserves then the utility of such a policy will be doubtful.

(*c*) Legal Reserve Requirements. Banks are obliged to maintain reserves with the Central Bank on two accounts, (*a*) the Cash Reserve Ratio or *CRR* (*b*) *SLR* or Statutory Liquidity Ratio.

(*i*) *CRR*.

Under *CRR* the banks are required to deposit with the Central Bank a percentage of their net demand and time liabilities. Varying the *CRR* is a tool of monetary and credit control. An increase in the *CRR* has the effect of reducing the banks excess reserves and thus curtail their ability to give credit.

(*ii*) *SLR*.

The *SLR* requires the banks to maintain a specified percentage of their net total demand and time liabilities in the form of designated liquid assets. These may be (*a*) excess reserves (*b*) unencumbered (are not acting as security for loans from central bank) government and other approved securities (securities whose repayment is guaranteed by the government) and (*c*) current account balances with other banks. Varying the *SLR* affects the freedom of banks to sell government securities or borrow against them from the central bank. This affects their freedom to increase the quantum of credit and, therefore, the money supply. Increasing the *SLR* reduces the ability of banks to give credit and vice versa.

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(*iii*) Imposing margin requirement on secured loans.

A margin is the difference between the amount of the loan and market value of the security offered by the borrower against the loan. If the margin imposed by the central bank is 40%, then the bank is allowed to give a loan only upto 60% of the value of the security. By altering the margin requirements, the central bank can alter the amount of loans made against securities by the banks. The advantages of this instrument are manifold. High margin requirements discourage speculative activities with bank credit and, therefore, divert resources from unproductive speculative activities to productive investments. By reducing speculative activities, there is reduction in the fluctuation of prices.

(*iv*) Reverse Repo Rate and Repo Rate.

The reverse repo rate is the rate at which banks put their short-term excess liquidity with the central bank in exchange for investment securities. In other words, **it is the return that banks earn on the excess funds put in the Central bank.** An increase in this rate squeezes out loose cash from the system to control prices chasing consumer goods. **Repo rate** is the rate at which the Central bank pumps in short-term liquidity into the system.

5. Custodian of Foreign Exchange Reserves

The central bank is the custodian of a country's stock of gold and international currencies. The central bank maintains the stability of exchange rate fixed by the government. All earnings, in foreign exchange transactions, are to be deposited with the central bank and are routed through it. By the sale and purchase of foreign currencies in the market, central bank can bring the external value of the currencies at par with their internal values, and help the government to pursue a coordinated policy towards balance of payment situation in a country.

6. Lender of Last Resort

The central bank is under the obligation to provide funds to commercial banks as and when they need financial help. The aim is that no sound and genuine business transaction should be restricted or abandoned due to shortage of funds. Commercial banks approach the central bank as a last resort in distress. The central bank advances necessary credit against eligible securities, subject to certain terms and conditions. Central bank never refuses to accommodate any eligible bank and help them to meet emergencies.

7. Stabilisation by Central Bank (RBI)

RBI often uses its instruments of money creation for stabilising the stock of money in the economy from external shocks.

5.6 COMPARISON BETWEEN CENTRAL BANK AND COMMERCIAL BANK

Table 5.1 gives the difference between Central Bank and a Commercial Bank.

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Table 5.1. **Comparison between Central Bank and Commercial Bank**

Central Bank	Commercial Bank
1. Central bank is an apex institution in the money market.	1. A commercial bank on the other hand, is merely a unit in the banking structure of the country, operating under the control of central bank.
2. A country has only one central bank.	2. A country has a large number of commercial banks.
3. This is generally owned and governed by the government.	3. These banks may be owned by government or by the private entrepreneurs.
4. A central bank does not aim at profit, though it may earn huge profits.	4. Commercial banks treat profit making as their primary objective.
5. It does not normally deal with general public.	5. Commercial banks deal with general public.
6. Central bank enjoys the monopoly power to issue currency.	6. Commercial banks do not have power to issue currency.
7. Central bank controls credit.	7. Commercial banks create credit.
8. It acts as an agent and a banker to the government. It functions as a custodian of the government's funds and gives advice on monetary and fiscal matters.	8. Commercial banks have no advisory responsibility towards the state.

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In spite of these differences between the central bank and commercial banks, the two are similar in two ways. Firstly, both are basically monetary institutions. Secondly, both of them create credit in one form or the other. When a central bank decides to issue paper money without adequate banking of appropriate securities, it creates credit. On the other hand, when a commercial bank has an excess cash reserve, it creates credit through primary and derivative deposits.

Points to Remember

Bank

Bank is defined as an institution which receives funds from the public and gives loans and advances to those who need them.

Commercial Bank

Commercial Bank accepts deposits from the general public and extends loans to households, government and firms with a view to earn profit.

Central Bank

1. Central bank is an apex institution that controls and regulates the monetary and banking system of the country. It is the sole agency of note issue in a country. It serves as a banker to the banks and government and controls the supply of money in the country.
2. The definition of central bank is, "a Central Bank is a bank which constitutes the apex of the monetary and banking structure of its country. In short, central bank is an institution which controls the entire monetary and banking system of a country."

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3. Central Bank differs from the commercial banks in the following respects:

(*i*) A central bank is a government institution, but a commercial bank is government or a private institution.

(*ii*) A central bank does not work for profit motive but the major aim of a commercial bank is to earn maximum profits.

(*iii*) A central bank does not directly deal with the public but a commercial bank directly deals with the public.

(*iv*) A central bank has the monopoly of note issue. This power is not enjoyed by a commercial bank.

(*v*) A central bank controls credit in a country whereas a commercial bank creates credit in a country.

(*vi*) There is only one central bank in a country, but there are many commercial banks.

4. A central bank performs several functions. The following are the major functions of a central bank:

(*i*) **Bank of Issue.** The central bank alone has the exclusive right of issuing currency notes in every country of the world.

(*ii*) **Banker to the government.** The central bank acts as banker, agent and financial advisor to the government.

(*iii*) **Banker's banks.** It performs the function of a banker to all other banks in the country.

(*iv*) **Lender of the last resort.** The central bank helps the commercial banks in times of financial difficulties.

(*v*) **Custodian of foreign exchange reserves**

(*vi*) **Controller of credit**

(*vii*) **Stabilisation**

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Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. What is banking?

2. What is a commercial bank? (*AI 2008; Delhi 2009*)

3. Name the institution which acts as a custodian of nation's foreign exchange reserves.

4. What is meant by bank rate? (*Delhi 2008, 09, 12*)

5. Define open market operations.

6. What is meant by cash reserve ratio? (*AI 2009; Sample Paper 2009*)

or

What is meant by statutory liquidity ratio? (*Sample Paper 2009; AI 2011*)

7. What is a central bank? (*Delhi 2008, 09; AI 2009; Foreign 2008, 2014*)

8. Give the meaning of demand deposits of commercial banks. (*Foreign 2009; AI 2009*)

9. Define cash reserve ratio. (*Delhi 2011*)

10. Define Legal Reserve Ratio. (*Foreign 2011*)

11. How can Reserve Bank of India help in bringing down the foreign exchange rate which is very high? (*AI 2013*)

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Multiple Choice Questions

1. Which of the following is a bank?
(*a*) Post office saving banks (*b*) LIC
(*c*) UTI (*d*) None of the above

2. The merit of issuing notes with RBI can be seen in:
(*a*) Uniformity in note issue (*b*) Stability in currency
(*c*) Control of credit (*d*) All of the above

3. When RBI acts a banker to the government, what does it do?
(*a*) It keeps bank accounts of the government
(*b*) It carries out government transactions
(*c*) It advises the government on all financial and monetary matters
(*d*) All of the above

4. Central bank _____ credit.
(*a*) Creates (*b*) Controls (*c*) Restricts (*d*) None of the above

5. _____ policy refers to policy measures taken by RBI to control and regulate money supply.
(*a*) Credit (*b*) Financial (*c*) Monetary (*d*) Fiscal

6. Quantitative instrument of RBI can be:
(*a*) Bank Rate policy (*b*) Cash Reserve Ratio
(*c*) Statutory Liquidity Ratio (*d*) All of the above

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Short Answer Type Questions **(*3/4 Marks*)**

1. Explain the meaning and any one function of a commercial bank. (*AI 2006*)
2. State the main function of a central bank. (*Delhi 2007*)
3. Explain 'currency authority' function of the central bank. (*Foreign 2008*)
4. Explain any one of the following function of a central bank: (*Delhi 2006*)
(*i*) Currency authority, and (*ii*) lender of last resort.
5. Explain the 'banker to government' function of central bank. (*AI 2007, 08, 09*)
6. How does the central bank acts as banker of the commercial banks? Explain.
7. Explain the 'banker's bank and supervisor' function of the central bank.
(*AI 2006*; *Foreign 2007, 08; Delhi 2009*)
8. Explain the 'issue of currency' of a central bank.
9. Explain the function 'controller of credit' function of a central bank.
10. How does a central bank perform the function of controller of credit? (*AI 2006*)
11. How does bank rate help in expanding or contracting credit in an economy?
or
What is a bank rate policy? How does it work as a method of credit control? (*Delhi 2008*)

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12. Distinguish between a commercial bank and a central bank. (*Foreign 2006*; *AI 2008; Delhi 2009*)

13. How does a central bank control the availability of credit by open market operations? Explain. (*AI 2004; Delhi 2008; Sample Paper 2009*)

14. State any three methods by which a central bank tries to control the quantity of credit. (*AI 2008*)

15. Explain any two main functions of central bank. (Delhi 2008 ; *AI, Foreign 2009*)

16. Distinguish between cash reserve ratio and statutory liquidity ratio. (*Foreign 2010*)

17. Explain the 'banker to the government' function of the central bank. (*AI 2010*)

18. How does a commercial bank create money? (*AI 2010*)

19. Explain how to 'open market operations' by the central bank affect money creation by commercial banks. (*AI 2010*)

20. Explain the 'lender of last resort' function of the Central Bank. (*Delhi 2010*; *AI 2013*)

21. Explain the process of money creation by Commercial Banks. (*Delhi 2010*)

22. How do changes in bank rate affect money creation by Commercial Banks? Explain. (*Delhi 2010*)

23. Explain the components of Legal Reserve Ratio.

or

Explain 'bankers' bank, function of Central bank. (*Delhi 2012*)

24. Explain the 'lender of last resort' function of the central bank.

or

Explain 'government's banker' function of the central bank. (*AI 2012*)

25. Explain 'Bank of issue' function of central bank.

or

Explain the distinction between 'Statutory liquidity ratio' and 'Legal reserve ratio'. (*Foreign 2012*)

26. Explain "Banker to the Government" function of the Central Bank. (*Delhi 2013*)

27. How do commercial banks create deposits? Explain. (*Delhi 2013*)

28. Explain the credit creation role of commercial banks with the help of a numerical example. (*AI 2013*)

29. How does central bank control credit creation by commercial banks through open market operations? Explain. (*AI 2013*)

30. Explain any two methods of credit control used by central bank. (*AI 2013*)

31. What is bank rate? How is it used by the central bank to control credit creation by commercial banks? (*Foreign 2013*)

32. Explain the meaning of "open market operations". How does the central bank use it for controlling credit creation by commercial banks? (*Foreign 2013*)

33. Explain "Banker's bank and supervisor" function of the central bank. (*Foreign 2013*)

34. Explain 'Banker to the Government' function of the central bank.

or

Explain 'Banker's Bank' function of the central bank. (*AI 2014*)

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35. Explain the 'lender of last resort' function of central bank. (*AI, Delhi 2014*)

36. Define money supply and explain its components. (*AI 2014*)

or

Explain the 'lender of last resort' function of central bank.

37. Explain the concept of money supply and its components. (*Foreign 2014*)

or

Explain the 'currency authority' function of central bank.

Long Answer Type Questions **(*6 Marks*)**

1. What are the main functions of a commercial bank? Explain.

2. Explain the process of credit creation by commercial banks. (*Sample Paper 2009*)

3. What are the important functions of central bank of an economy? Explain.

4. Define central bank. Give difference between central bank and a commercial bank.

5. Explain the process of money creation by the commercial banks with the help of a numerical example. (*Delhi 2011*)

6. Explain the following functions of the central bank: (*AI 2011*)

(*i*) Bank of issue (*ii*) Bankers' bank

7. How do commercial banks create credit? (*Foreign 2011*)

8. Explain any two functions of central bank. (*Delhi, AI 2012*)

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Answers

Multiple Choice Questions

1. (*d*) **2.** (*d*) **3.** (*d*) **4.** (*b*) **5.** (*c*) **6.** (*d*)

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Value Based and Higher Order Thinking (HOT) Questions (*With Answers*)

Unit 6: Money and Banking

Q1. Explain M_1.

Ans. From April 1977, following the recommendations of its Second Working Group on Money Supply, the Reserve Bank of India (RBI) has presented four measures of money supply namely M_1, M_2, M_3 **and** M_4. These are defined below in decreasing order of their liquidity:

M_1 **Measurement.** M_1 is narrow definition of money. M_1 is most liquid and easiest for doing transactions.

$M_1 = C + DD + OD$

where,

C = Currency held by public.

DD = Net demand deposits of the bank (Net demand deposits do not include inter-banking claims)

OD = Other deposits held with the RBI. These are deposits of quasi-government institutions like Industrial Development Bank of India, International Monetary Fund, World Bank etc., with the RBI.

Q2. Explain money multiplier.

Ans. This process of a deposit becoming a loan or an investment, which in turn becomes a new deposit goes on, till the original deposit of ₹ 1,000 is completely exhausted. The original deposit of ₹ 1,000 becomes additional deposits of ₹ 900, ₹ 729, etc. If we add up all these deposits, the total will be ₹ 10,000 or 10 times the original deposits of ₹ 1,000. That is, the deposit multiplier is 10. It is a self-sustaining, continuous and complete process where on one hand deposits are multiplying and on the other hand commercial banks are increasing their assets.

The formula for calculating deposit or money multiplier is:

Money Multiplier = $\frac{1}{LRR}$

where,

k = deposit multiplier

LRR = legal reserve ratio.

Q3. Explain the following functions of Central Bank:

(*a*) Custodian of foreign exchange reserves

(*b*) Lender of last resort

Ans. (*a*) Custodian of foreign exchange reserves. The central bank is the custodian of a country's stock of gold and international currencies. The central bank maintains the stability of exchange rate fixed by the government. All earnings, in foreign exchange transactions are to be deposited with the central bank and are routed through it. By the sale and purchase

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of foreign currencies in the market, central bank can bring the external value of the currencies at par with their internal values, and help the government to pursue a coordinated policy towards balance of payment situation in a country.

(*b*) Lender of last resort. The central bank is under the obligation to provide funds to commercial banks as and when they need financial help. The aim is that no sound and genuine business transaction should be restricted or abandoned due to shortage of funds. Commercial banks approach the central bank as a last resort in distress. The central bank advances necessary credit against eligible securities, subject to certain terms and conditions. Central bank never refuses to accommodate any eligible bank and help them to meet emergencies.

Q4. What is a 'legal tender'? What is 'fiat money'?

Ans. Fiat money. It refers to money by order/authority of the government. It includes notes and coins.

Legal tender. Money may be classified as limited legal tender and unlimited legal tender.

(*i*) Limited legal tender. Limited legal tender is that money in which no person can be forced to accept beyond a particular limit fixed by law. In India, coins of the denominations of one paise to twenty five paise are legal tender only upto ₹ 25.

(*ii*) Unlimited legal tender. Unlimited legal tender is that money which a person has to accept without any legal limit. In India, one-rupee coin, 50 paise coin and paper notes of all denominations are unlimited legal tender.

Q5. What do you mean by money supply? Explain the main components of money supply.

Ans. The stock of money held by the public at a point of time in an economy is referred to as the money supply.

There are two main components of money supply, *i.e.*, currency component and deposit component.

1. Currency Component. It consists of coins and paper currency.

(*a*) Coins. Coins are made up of metal. The metallic coins are issued by the monetary authority of the country *i.e.*, central bank with the central government of the country. Today, in India coins of 50 paise, ₹ 1, ₹ 2 and ₹ 5 are in use.

(*b*) Paper Currency. Paper currency or currency notes are the most important part of the money supply. The central bank in every country has monopoly right of issuing currency notes. In India, one rupee note is issued by the Ministry of Finance, Government of India, while the remaining notes of higher denominations or coins are issued by the central bank, *i.e.*, Reserve Bank of India.

2. Deposit Component or Demand Deposits Demand deposits are also the most important component of the money supply. These are the money deposits made by the depositor or owner of the deposit to the bank. Now bank is agreed to honour such demands or pay money on demand at any time and to whomsoever the owner of the deposit may wish. For this purpose the people use cheques to meet financial obligations.

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Q6. What is credit money?

Ans. Credit money is money whose value as money is more than the commodity value of the material form in which the money is made. Credit money is of four kinds:

Q7. How does bank rate policy help in expanding or contracting credit in an economy?

Ans. The bank rate is the rate at which the central bank lends funds as a 'lender of last resort' to banks, against approved securities or eligible bills of exchange. The effect of a change in the bank rate is to change the cost of securing funds from the central bank. An increase in the bank rate increases the costs of borrowing from the central bank. This will reduce the ability of banks to create credit. A rise in the bank rate will then cause the banks to increase the rates at which they lend. This will then discourage businessmen and others from taking loans, thus reducing the volume of credit. A decrease in the bank rate will have the opposite effect.

Q8. If legal reserve ratio is 0.5 and initial deposit by people is ₹ 100 crores then calculate total money created by commercial banks?

Ans. Money multiplier = $\frac{1}{LRR} = \frac{1}{0.5} = 2$

Money creation = Initial deposit × $\frac{1}{LRR}$

= 100 × 2 = ₹ 200 crores.

Q9. What is High Powered Money?

Ans. It is money created or produced by the RBI.

Q10. Give the formula of Money Multiplier?

Ans. Money Multiplier = $\frac{1}{LRR}$

Lower the value of *LRR*, higher is the value of money mulitiplier.

Q11. Explain "bankers bank and supervisor" function of central bank.

Ans. As the banker to banks, the Central Bank holds a part of the cash reserves of banks, lends them short-term funds and provides them with centralised clearing and remittance facilities. The banks are required to deposit a stipulated ratio of their net total liabilities (the *CRR*) with the Central Bank. The purpose of this stipulation is to use these reserves as an instrument of monetary and credit control. In addition to this the bank holds excess reserves with the Central Bank to meet any clearing drains due to settlement with other banks or net withdrawals by their account holders. The pool of funds with the Central Bank serves as a source from which it can make advances to banks temporarily in need of funds, acting in its capacity as lender of last resort.

The Central Bank supervises, regulates and controls the commercial banks. The regulation of banks may be related to their licensing, branch expansion, liquidity of assets, management, amalgamation (merging of banks) and liquidation (the winding up of banks). The control is exercised by periodic inspection of banks and the returns filled by them.

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Q12. Give some importance of money.

Ans. Importance of money can be seen from the following:

1. Money may not produce anything, but without it, nothing can be produced.
2. With the help of money, consumers make payment for goods and services.
3. With the help of money, producers can buy raw material, plant and machinery. They can settle their debts and pay corporate taxes.
4. Money has contributed to economic growth all over the world because it has removed trade barriers.
5. With the help of money, government realises all taxes, fees, fines, penalties and other sources of public revenue.

Thus, money can serve mankind if it is controlled and regulated. But if it goes out of control, it can lead to disastrous consequences.

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NCERT Textual Questions with Answers

Unit 6: Money and Banking

Q1. What is a barter system? What are its drawbacks?

Ans. The direct exchange of goods for goods without the use of money is called barter system.

The major drawbacks of the barter system are:

(*a*) Lack of double coincidence of wants. The lack of double coincidence of wants is the major drawback of the barter system. It is very rare when the owner of some good or service could find someone who wanted his goods or services and possessed that good or service that the first person wanted. No exchange is possible if the double coincidence of wants is not there.

(*b*) Lack of common measure of value. The second main drawback of barter is the absence of a common unit of measurement in which the value of goods and services can be measured. In the absence of common unit, proper accounting is not possible.

(*c*) Lack of standard for deferred payments. The third drawback of the barter system is that it lacks any satisfactory unit to engage in contracts involving future payments. In a barter economy, future payments would have to be stated in specific goods or services which may involve disagreement over the quality of goods or even on the commodity used for repayment.

(*d*) Lack of store of value. The barter system does not provide for any method of storing purchasing power for future use. It can be stored only in terms of commodities which is subject to storage cost, durability, increase or decrease in the value of good and the difficulty in disposing of the commodity without loss.

Q2. What are the main functions of money? How does money overcome the shortcomings of a barter system?

Ans. Main functions of money are:

(*a*) Money acts as a medium of exchange. Money serves as a medium of exchange or medium of payments. Money helps in buying and selling of goods. Goods are exchanged for money and this money can be used for buying any other good that we need. Thus, money acts as an intermediary and facilitates trade. Money has removed the difficulty of double coincidence of wants. Now, a person *A* can sell his goods to another person *B* for money and then he can use that money to buy the goods he wants. Money has made the exchange of goods easy.

(*b*) Unit of value. Money serves as a unit of value or common measure of value in terms of which the value of all goods and services are measured. This helps in measuring the exchange values of commodities. The prices of all the goods and services can be fixed in terms of money and the problem of expressing of the value of each commodity in terms of quantities of other goods can be avoided. This function of money makes it possible to keep business accounts. It would not be possible to keep business account unless all business transactions are expressed in terms of money.

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(*c*) **Standard of deferred payments.** Money also serves as a standard of deferred payments. Deferred payments refer to those payments which are made in future. When we borrow money from somebody in the present, we have to return both the principal as well as interest amount at some future date. It is easy to make such payments in terms of money because its price remains relatively stable as compared to other commodities.

(*d*) **Store of value.** Money serves as a store of value. It means that money is an asset and can be stored in future. Under barter system, storing of value (savings) is very difficult in terms of goods. But money has completely solved this problem. Now, savings are done in terms of money. Whereas the value of goods are frequently changing, value of money is more or less stable. Moreover, goods are perishable, money is not perishable in the same sense. Money occupies less space for storage in comparison with goods. Hence, money is the best form of 'store of value'.

Q3. What is transaction demand for money? (*a*) How is it related to the value of transactions over a specified (*b*) Period of time?

Ans. This question is out of syllabus.

Q4. Why is speculative demand for money inversely related to the rate of interest?

Ans. This question is out of syllabus.

Q5. What is 'liquidity trap'?

Ans. This question is out of syllabus.

Q6. What are the alternative definitions of money supply in India?

Ans. Measures of Money Supply

From April 1977, following are the recommendations of its Second Working Group on Money Supply the Reserve Bank of India (RBI) has presented four measures of money supply namely M_1, M_2, M_3 and M_4. These are defined below in decreasing order of their liquidity:

where,

M_1 Measurement: M_1 is narrow definition of money. M_1 is most liquid and easiest for transactions.

$M_1 = C + DD + OD$

$M_2 = M_1$ + Savings of the people with post offices.

$M_3 = M_1$ + Net time deposits with the commercial banks.

$M_4 = M_3$ + Savings with the Post Offices (other than in the form of National Saving Certificate

Q7. What is a 'legal tender'? What is 'fiat money'?

Ans. Fiat money. It refers to money by order/authority of the government. It includes notes and coins.

Legal tender. Money may be classified as limited legal tender and unlimited legal tender.

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(*i*) Limited legal tender. Limited legal tender is that money which no person can be forced to accept beyond a particular limit fixed by law. In India, coins of the denominations of one paise to twenty five paise are legal tender only upto ₹ 25.

(*ii*) Unlimited legal tender. Unlimited legal tender is that money which a person has to accept without any legal limit. In India, one-rupee coin, 50 paise coin and paper notes of all denominations are unlimited legal tender.

Q8. What is High Powered Money?

Ans. It is money created or produced by the RBI.

Q9. Explain the functions of a commercial bank.

Ans. A commercial bank is a financial institution which accepts deposits from the public and advances loans to others. The main functions that commercial banks perform are:

(*i*) Accepting of deposits.

(*ii*) Agency functions.

(*iii*) Investment of funds.

(*iv*) Agency functions.

(*v*) General utility services.

Q10. What is money multiplier? How will you determine its value? What ratios play an important role in the determination of the value of the money multiplier?

Ans. Money Multiplier = $\frac{1}{LRR}$.

Lower the *LRR*, higher is the value of money multiplier and vice versa.

Q11. What are the instruments of monetary policy of RBI? How does RBI stabilise money supply against exogenous shocks?

Ans. The main instruments of monetary policy of RBI are:

Quantitative Methods

1. Bank Rate Policy

2. Open Market Operations

3. Varying Reserve Requirements

(*a*) Cash Reserve Ratio

(*b*) Statutory Liquidity Ratio.

Qualitative Methods

1. Margin Requirement

2. Moral Suasion

3. Selective Credit Controls

Stabilisation by RBI. RBI often uses its instruments of money creation for stabilising the stock of money in the economy from external shocks.

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Q12. Do you consider a commercial bank 'creator of money' in the economy?

Ans. Credit Creation. Credit creation is one of the most significant function performed by commercial banks. Credit is defined as finance made available by one party to another party on a certain rate of interest. Credit plays a crucial role in the monetary and business system.

Credit creation process. Depositors have current account in commercial banks and can meet their obligations through cheques. These banks have the power to expand or contract demand deposits. This power is known as credit creation or credit contraction. Whenever a bank gives a loan, it creates a deposit. Commercial banks are able to multiply loans and investment and, thus, multiply deposits. A small volume of cash is the basis of multiplication of deposits, through multiplication of loans and advances. This is how commercial banks creates credit.

Q13. What role of RBI is known as 'lender of last resort'?

Ans. Lender of the last resort. The central bank acts as a lender of the last resort for commercial banks. When commercial banks fail to meet obligations of their depositors, the central bank comes to their rescue. The central bank advances necessary credit against eligible securities subject to certain terms and conditions. This saves banks from a possible breakdown. Central bank never refuses to accommodate any eligible bank and help them in need. This function of the central bank is regarded as the basic important function of Central Banking System.

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Determination of Income and Employment

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This Unit Contains

6. Income Determination and the Multiplier
7. Problems of Excess and Deficient Demand and Policy Measures to Correct Them

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Income Determination and the Multiplier



Chapter Scheme

6.1 Aggregate Demand (*AD*)
- 6.1.1 Meaning of *AD*
- 6.1.2 Components of *AD*

6.2 Aggregate Supply (*AS*)
- 6.2.1 Meaning of *AS*
- 6.2.2 Components of *AS*

6.3 Consumption Expenditure and Consumption Function
- 6.3.1 Meaning of Consumption Expenditure
- 6.3.2 Consumption Function
- 6.3.3 Graphical Presentation of Consumption Equation
- 6.3.4 Average Propensity to Consume (*APC*)
- 6.3.5 Marginal Propensity to Consume (*MPC*)
- 6.3.6 Saving and Saving Function
- 6.3.7 Average Propensity to Save (*APS*)
- 6.3.8 Marginal Propensity to Save (*MPS*)
- 6.3.9 Relationship Between *MPC* and *MPS*
- 6.3.10 Relationship Between *APC* and *APS*
- 6.3.11 Derivation of Saving Function from Consumption Function
- 6.3.12 Derivation of Saving Curve from Consumption Curve
- 6.3.13 Derivation of Consumption Curve from Saving Curve
- 6.3.14 Solved Numerical Problems on Consumption and Savings

6.4 Investment (*I*)
- 6.4.1 Types of Investment
- 6.4.2 Ex-ante Saving and Investment
- 6.4.3 Ex-post Saving and Investment

6.5 Determination of Equilibrium Level of Income, Output and Employment
- 6.5.1 AD-AS Approach
- 6.5.2 The Adjustment Mechanism when *AD* is Not Equal to *AS*
- 6.5.3 Savings–Investment Approach
- 6.5.4 The Adjustment Mechanism when Savings is Not Equal to Investment
- 6.5.5 Numerical Examples on Equilibrium Level

6.6 Concepts of Full Employment, Voluntary Unemployment and Involuntary Unemployment

6.7 Under Employment Equilibrium

6.8 Investment Multiplier
- 6.8.1 Meaning of Investment Multiplier
- 6.8.2 Relationship Between Investment Multiplier and *MPC*
- 6.8.3 Relationship Between Investment Multiplier and *MPS*
- 6.8.4 Multiplier Mechanism
- 6.8.5 Solved Numerical Problems on Multiplier

- **Important Formulas**
- **Points to Remember**
- **Test Your Knowledge**
- **Answers To MCQs**
- **Annexure: Paradox of Thrift**

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6.1 AGGREGATE DEMAND (*AD*)

6.1.1 Meaning of *AD*

Aggregate Demand means the total demand for final goods and services in the economy. It also means the aggregate or total expenditure on final goods and services in an economy.

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AD is also defined as **'total amount of money which all the sections (households, firms, government) are ready to spend on purchase of goods and services produced in an economy during a given period.** Alternatively, it is the total expenditure which the community intends to incur on purchase of goods and services. Thus, **aggregate demand is synonyms with aggregate expenditure** in the economy. If the total intended (*i.e.*, ex-ante) expenditure on buying all the output is larger than before, it means a rise in aggregate demand. On the contrary, if people decide to spend less on the available output, it means a fall in aggregate demand. *Aggregate demand is the total expenditure on consumption and investment*.

6.1.2 Components of *AD*

The main components of Aggregate demand (aggregate expenditure) are:

1. Household (or private) consumption demand (C)
2. Private Investment demand (I)
3. Government demand for goods and services (G)
4. Net export demand ($X - M$)

Thus, $\boldsymbol{AD = C + I + G + (X - M)}$

We discuss below each of the above components:

1. **Household (or Private) Consumption Demand (C).** *It is defined as value of goods and services that households are able and willing to buy.* Alternatively, it refers to total expenditure to be incurred by all households on purchase of goods and services. *For instance,* households' demand for food, clothing, housing, books, furniture, medical services, etc. will be called household consumption demand.

2. **Private Investment Demand (I).** *It refers to planned (ex-ante) expenditure on creation of new capital assets like machines, buildings and raw material by private entrepreneurs.* Investment is made not only to maintain present level of production but also to increase production capacity in future. ***An economy grows through investment***.

   The relationship between investment demand and rate of interest is called investment demand function. There is inverse relationship between rate of interest and investment demand. Investment is of two types—Autonomous and Induced, but all private investment expenditure is assumed as autonomous investment.

3. **Government Demand for Goods and Services (G).** *It refers to government planned (ex-ante) expenditure on purchase of consumer and capital goods to fulfil common needs of the society.* These include schools, transport, hospitals, roads, parks, etc. Government demand depends upon society's welfare needs and defence needs and is not guided by the profit motive.

4. **Net Export Demand [Exports (X) − Imports (M)].** *Net Export Demand is defined as the aggregate of all demand for our goods and services by foreign countries over our country's demand for foreign countries' goods and services.* It depends upon foreign exchange rate, terms of trade, trade policy, balance of payment position, etc. Symbolically,

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Net Export = Exports (X) − Imports (M)

Taking into account all the four components of AD, we obtain:

$$AD = C + I + G + (X - M)$$

But Keynes takes AD as the sum total of first two components only, namely, C and I. Thus, AD can be mathematically calculated as:

Aggregate demand = Consumption demand + Investment demand

or $AD = C + I$

AD curve is graphically illustrated in Fig. 6.1

where,

$\bar{I}$ = Investment curve is a straight line parallel to x-axis because according to Keynes, level of investment remains constant at all levels of income during short period.

AD = The aggregate demand curve is obtained by adding the fixed level of investment to the consumption expenditure. Thus, AD curve is positively sloping and parallel to the consumption curve and the gap between C and AD is equal to the amount of autonomous investment.

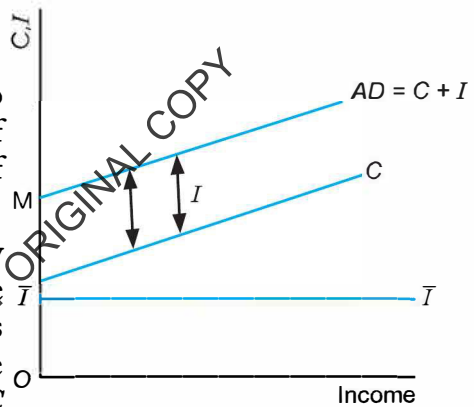


Fig. 6.1 The AD Curve where $AD = C + I$

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AD curve has a positive slope which means when income increases, AD (expenditure) also increases. AD curve does not originate from origin. It means that even at zero level of income, some minimum level of consumption is essential.

6.2 AGGREGATE SUPPLY (*AS*)

6.2.1 Meaning of *AS*

Aggregate supply (*AS*) is the money value of total supply of goods and services available for purchase by an economy during a given period. In other words, AS is the aggregate cost of total output produced in an economy. It is **national income** or **net national product** at **factor cost (NNP_{FC})**.

6.2.2 Components of *AS*: $AS = C + S$

The two main components of AS or national income or output are:

1. Consumption Expenditure (C)
2. Savings (S)

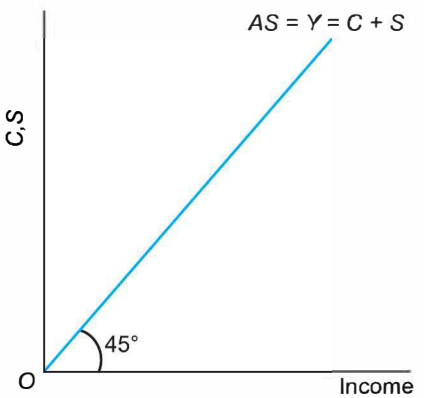


Fig. 6.2 The AS curve where $AS = C + S$

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A major portion of income is spent on consumption of goods and services and the balance is saved. Taking into account the two main components of *AS*, we obtain:

National Income or Aggregate Supply = Consumption + Savings

$$AS \text{ or } Y = C + S$$

where,

Y = National income.

AS curve is graphically illustrated in Fig. 6.2, where,

AS = The aggregate supply curve which is a 45° positively sloping line from the origin. It is also called ***a guideline.*** **Every point on the *AS* curve is equidistant from the *x*-axis and the *y*-axis implying that total income is equal to total expenditure or spending. *i.e.*, *C* + *S*.** If whole of national income is spent on consumption of goods and services, then $S = 0$. It is called ***break-even point*.**

6.3 CONSUMPTION EXPENDITURE AND CONSUMPTION FUNCTION

6.3.1 Meaning of Consumption Expenditure

It is the most important component of *AD*. Consumption expenditure is defined as the total expenditure on purchasing goods and services for private consumption purposes by all the households in an economy.

6.3.2 Consumption Function

The level of household consumption depends directly upon the level of disposable income (Y_d). Symbolically,

$$C = f(Y_d)$$

where,

Y_d = Disposable income. It is calculated as:

Disposable Income = Personal Income − Personal Taxes

If disposable income increases, household consumption expenditure increases. But by how much will consumption expenditure change to a change in disposable income, depends upon **propensity to consume.**

6.3.3 Graphical Presentation of Consumption Equation

Graphically, the consumption curve is upward sloping originating from the *y*-axis. It shows direct relationship between level of disposable income and consumption expenditure. Consumption function is given by the equation

$$C = \bar{c} + bY$$

where

C = Consumption

$\bar{c}$ = Autonomous consumption, $\bar{c} > 0$

b = Marginal propensity to consume, $0 < b < 1$

Y = Level of income

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In the equation $\bar{c}$ is **autonomous consumption expenditure. It is defined as the amount of consumption expenditure when income is zero.** It is assumed to be positive, (*i.e.*, $\bar{c} > 0$). Even if income is zero, consumption cannot be zero. Consumption will take place from past savings. It is drawn in Fig. 6.3.

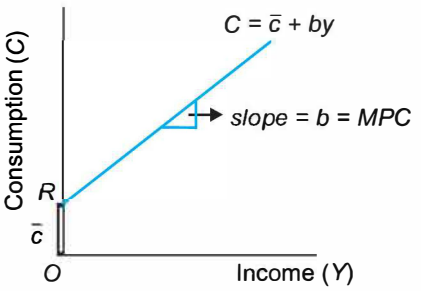


Fig. 6.3 Household Consumption Expenditure Curve

where,

RC = The consumption expenditure curve. Point *R* shows that even if income is zero, consumption expenditure of *OR* is incurred from past savings. *OR* is autonomous consumption. Beyond point *R* as income rises, consumption expenditure increases but in a lesser proportion. Consumption curve rises at slope *b*.

6.3.4 Average Propensity to Consume (*APC*)

Propensity to consume refers to the schedule which shows the level of consumption at different levels of income in an economy. *APC* is defined as the rate of aggregate consumption expenditure to aggregate income. It determines the percentage of income spent on consumption. Symbolically,

$$APC = \frac{C}{Y}$$

Illustration. If Y = ₹ 50 crore and C = ₹ 10 crore

then $APC = \frac{C}{Y} = \frac{10 \text{ crore}}{50 \text{ crore}} = 0.2 \text{ crore} = 20\%$

It means that 20% of the income is spent on consumption.

Graphically, *APC* can be shown as in Fig. 6.4.

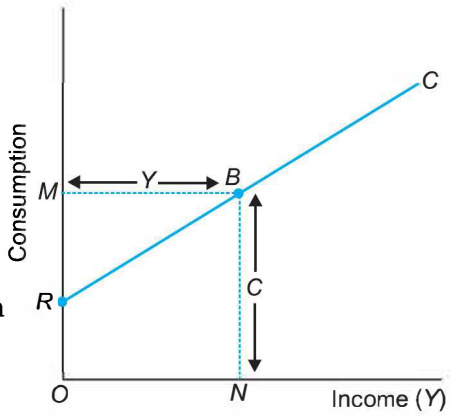


Fig. 6.4 *APC* at point $B = \frac{BN}{MB}$

Features of *APC* are:

1. *APC* at point *B*, which is measured by $\frac{C}{Y}$ ratio, is graphically calculated as:

$$APC = \frac{C}{Y} = \frac{OM}{ON} = \frac{BN}{MB}$$

2. At zero level of income (Point *R*),

$$APC = \frac{OR}{Zero} = \infty$$

3. *APC* declines continuously as income rises.
4. *APC* can be more than one. It occurs when consumption is more than income.

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6.3.5 Marginal Propensity to Consume (*MPC*)

***MPC* is defined as a measure of the rate at which aggregate consumption spending changes as national income changes.** Symbolically,

$$MPC = \frac{\Delta C}{\Delta Y}$$

where, ΔC = Change in consumption

ΔY = Change in income

Illustration. If income and consumption values are:

Income (*Y*)	**Consumption Expenditure (*C*)**
₹ 50 crores	₹ 10 crores
₹ 100 crores	₹ 30 crores

then $MPC = \frac{\Delta C}{\Delta Y} = \frac{20 \text{ crore}}{50 \text{ crore}} = 0.4 \text{ crore} = 40\%$

It means that 40% of the additional increase in income is being consumed. Graphically, *MPC* can be shown as in Fig. 6.5.

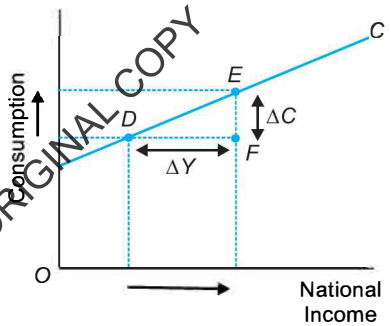


Fig. 6.5 $MPC = \frac{EF}{DF}$

Features of *MPC* are:

1. *MPC* which is measured by $\frac{\Delta C}{\Delta Y}$ is graphically the slope of the consumption curve and is calculated as $MPC = \frac{\Delta C}{\Delta Y} = \frac{EF}{DF}$.
2. *MPC* remains same or constant throughout.
3. The value of *MPC* lies between zero and one because change in consumption is always less than change in income. *MPC* cannot be more than one.

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Illustration. Let consumption function be:

$C = 50 + 0.6Y$

Plot the Consumption curve, by showing break-even point.

Solution. It is an equation of a straight line. Table below shows level of consumption for different income levels.

Table. **Calculation of Consumption and *MPC***

Income (*Y*)	**Consumption (*C*) $C = 50 + 0.6\,Y$**	**Change in Income (ΔY)**	**Change in Consumption (ΔC)**	***MPC*** $= \frac{\Delta C}{\Delta Y}$
0	50	–	–	–
100	110	100	60	0.6

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200	170	100	60	0.6
300	230	100	60	0.6

***MPC* is same at all levels of income.** The information given in the table can be graphically plotted in Fig 6.6. In this figure,

Y = It is 45° line from the origin. It has the property that every point on it is equidistant from both axis that is, at each point on this line, $C = Y$.

C = It is consumption function $C = 50 + 0.6Y$ which is graphically plotted. The slope of consumption curve (*MPC*), is constant at 0.6.

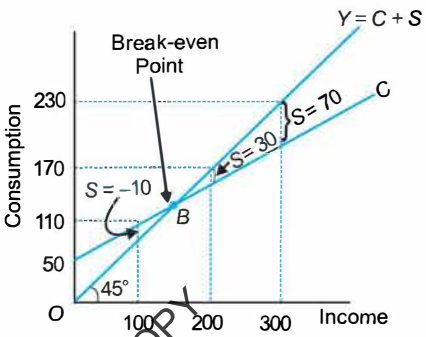


Fig. 6.6 The Consumption function $C = 50 + 0.6\ Y$

Point B= It is the **break-even point** where, $C = Y$. It occurs at point B where income and consumption levels are equal. At any point to the left of B, $C > Y$, there are dissavings. At any point to the right of B, $Y > C$, there are savings.

Illustration. Let consumption function be given by:

$C = 100 + 0.8\ Y$

Plot the consumption curve, break-even point.

Solution. Since this is an equation of a straight line, the consumption function will have a constant slope.

Table below shows the level of consumption for various levels of income.

Column (1) shows the consumption expenditure at various levels of income. The values in column (1) are obtained from the consumption function. Column (5) shows how *MPC* is calculated. As income increases from ₹ 600 to ₹ 700 (an increase of 100 rupees), the consumption increases from ₹ 580 to ₹ 660 (an increase of 80 rupees). The *MPC* is therefore 80/100=0.8. The *MPC* at all levels of income is the same because of the particular consumption function we have used in our example. **(Constant slope and therefore constant *MPC* is a feature of all straight line consumption functions).** The information given in the Table can be plotted in a graph as in Fig. 6.7.

Table. **Consumption, Income and Marginal Propensity to Consume**

Consumption C (₹) (1)	**Change in Consumption (ΔC) (2)**	**Income Y (₹) (3)**	**Change in Y (ΔY) (4)**	**Marginal Propensity to consume (*MPC*) (2)/(4) = $\frac{\Delta C}{\Delta Y}$**
(1)	(2)	(3)	(4)	(5)
100	–	0	–	–
180	80	100	100	(80/100) = 0.8
260	80	200	100	(80/100) = 0.8

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340	80	300	100	(80/100) = 0.8
420	80	400	100	(80/100) = 0.8
500	80	500	100	(80/100) = 0.8
580	80	600	100	(80/100) = 0.8
660	80	700	100	(80/100) = 0.8
740	80	800	100	(80/100) = 0.8
820	80	900	100	(80/100) = 0.8
900	80	1000	100	(80/100) = 0.8

45° Line = Since the vertical and horizontal axis have the same scale, the 45° line has the property that at any point on it, the distance up from the horizontal axis (which is consumption expenditure) exactly equals the distance across from the vertical axis (which is income). Thus, at any point on the 45° line, consumption expenditure exactly equals income. The 45° line, therefore, immediately tells us whether consumption spending (as per the consumption function) is equal to, greater than, or less than the level of income.

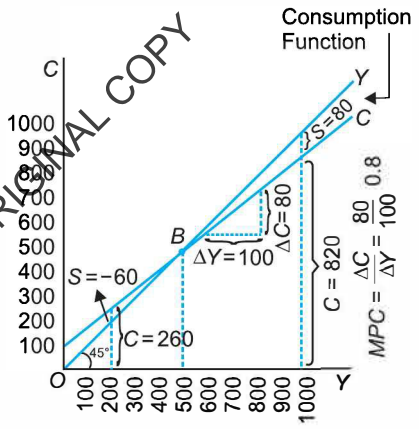


Fig. 6.7 The Consumption Function
$C = 100 + 0.8\ Y$

Point *B* = The consumption function crosses the 45° line at point *B*. This point is known as the **break-even point**. Here households are just breaking even, because the consumption is exactly equal to the income. In our example, the income and consumption at the break-even point is ₹ 500.

From origin till point *B* = At any point other than *B* on the consumption function, consumption is not equal to income. At points to the left of *B*, the consumption function lies above the 45° line. Therefore, consumption expenditure is greater than income. For example, at an income level of ₹ 200, the consumption is ₹ 260. The household must find funds to meet this consumption expenditure. The shortage in income will make them sell the assets acquired in the past, or to resort to borrowing so that ₹ 60 could be raised for consumption. This act on the part of the household to liquidate their own assets or to go in for a loan is referred to as the process of **dissaving**. Dissaving is in order to help the households to finance the consumption over and above the level of income.

Point *B* onwards = At any point to the right of *B*, the consumption function lies below the 45° line; therefore, consumption expenditure is less than the level of income. The part of income, which is not consumed, is saved. This must be so, because income is either consumed or saved, there is no other use to which it can be put. Savings can be measured in the graph as the vertical distance between the consumption function and the 45° line. *For example*, at an income level of ₹ 900, consumption is ₹ 820. Therefore, the amount of savings is the difference between the two, that is, ₹ 80.

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To sum up: when the consumption function lies above the 45° line, consumption is greater than income at each level of income. This means that there is dissaving, where the two lines intersect, the level of consumption is exactly equal to the level of income. When the consumption function lies below the 45° line, the level of consumption is less than the level of income. This means that there is positive saving. The amount of dissaving or saving is always measured by the vertical distance between the consumption function and the 45° line.

6.3.6 Saving and Saving Function

Saving is that part of income which is not consumed. In other words, income over consumption is called saving. Symbolically,

$$S = Y - C$$

Saving Function. It shows the functional relationship between saving and income. It can be expressed as:

$$S = f(Y)$$

where

S = Savings
Y = Income
f = Function

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6.3.7 Average Propensity to Save (*APS*)

***APS* is defined as the ratio of aggregate savings to aggregate income.** It determines the percentage of income which is saved. Symbolically,

$$APS = \frac{S}{Y}$$

Illustration.

If Y = ₹ 50 crore and C = ₹ 10 crore

then $S = Y - C = 50 - 10 = 40$ crore

and $APS = \frac{S}{Y} = \frac{40 \text{ crore}}{50 \text{ crore}} = 0.8 \text{ crore} = 80\%$

It means that 80% of the income is being saved.

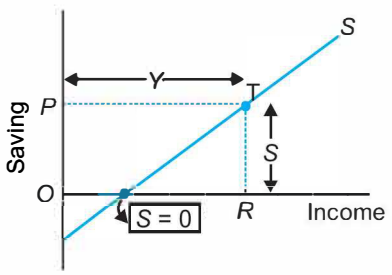


Fig. 6.8 $APS = \frac{TR}{PT}$

Graphically, *APS* is measured as shown in Fig. 6.8. *APS* which is measured by $\frac{S}{Y}$ ratio, is graphically calculated as:

$$APS = \frac{S}{Y} = \frac{OP}{OR} = \frac{TR}{PT}$$

Important Points about *APS*

1. **APS can never be 1 or more than one.** As saving can never be equal to or more than national income.

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2. **APS can be 0.** APS = 0 when savings are zero. This point is known as Break-even point.
3. **APS can be negative or less than 1.** At income levels which are lower than the break-even point, *APS* can be negative as there will be dissavings in the economy.
4. ***APS* rises with increase in income.** *APS* rises with increase in income because the proportion of income saved keeps on increasing.

6.3.8 Marginal Propensity to Save (*MPS*)

***MPS* is defined as the measure of the rate at which saving changes as national income changes.** Symbolically,

$$MPS = \frac{\Delta S}{\Delta Y}$$

where ΔS = Change in saving

ΔY = Change in income

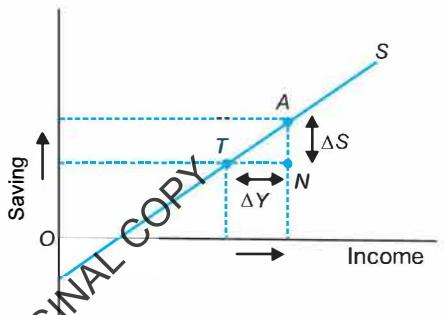


Fig. 6.9 $MPS = \frac{AN}{TN}$

Illustration. If income and consumption values are:

Income (Y)	Consumption Expenditure (C)	Saving $Y - C$
₹ 50 crore	₹ 10 crore	₹ 40 crore
₹ 100 crore	₹ 30 crore	₹ 70 crore

then saving values can be calculated by $S = Y - C$

$$MPS = \frac{\Delta S}{\Delta Y} = \frac{₹\ 30 \text{ crore}}{₹\ 50 \text{ crore}} = 0.6 = 60\%$$

It means that 60% of the additional income is being saved.

Graphically, *MPS* is measured as shown in Fig. 6.9.

MPS which is measured by $\frac{\Delta S}{\Delta Y}$ is graphically the slope of the saving curve. It is calculated as $MPS = \frac{\Delta S}{\Delta Y} = \frac{AN}{TN}$.

Important Points about *MPS*:

1. *MPS* is always positive

2. *MPS* varies between 0 and 1

(*a*) If the entire additional income is saved, *i.e.*, ΔC = 0, then *MPS* = 1.

(*b*) However, if entire additional income is consumed, *i.e.*, ΔS = 0, then *MPS* = 0.

6.3.9 Relationship Between *MPC* and *MPS*

$$MPC + MPS = 1$$

This will always hold because *MPC* is always positive and less than one.

Thus, *MPS* must also be positive and less than one.

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Proof. $Y = C + S$

$\Rightarrow \quad \Delta Y = \Delta C + \Delta S$

Dividing both sides by ΔY, we get:

$$\Rightarrow \quad \frac{\Delta Y}{\Delta Y} = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y}$$

$\Rightarrow \quad 1 = MPC + MPS$

or $MPC = 1 - MPS$

or $MPS = 1 - MPC$

Thus, sum of *MPC* and *MPS* is always equal to unity.

6.3.10 Relationship Between *APC* and *APS*

$$\boldsymbol{APC + APS = 1}$$

This will always hold because income can be either consumed or saved.

Proof. $Y = C + S$

Dividing both sides by *Y*, we get:

$$\Rightarrow \quad \frac{Y}{Y} = \frac{C}{Y} + \frac{S}{Y} \qquad \Rightarrow \qquad 1 = APC + APS$$

or $APC = 1 - APS$ or $APS = 1 - APC$

Thus, the sum of *APC* and *APS* is always equal to unity.

6.3.11 Derivation of Saving Function from Consumption Function

Since $S = Y - C$

and $C = \bar{c} + bY$

$\therefore \quad S = Y - (\bar{c} + bY)$

$= Y - \bar{c} - bY$

$= -\bar{c} + Y - bY$

$= -\bar{c} + (1 - b)Y$

$\therefore \quad \boldsymbol{S = -\bar{c} + MPS.Y}$ … since $MPC + MPS = 1$

$b + MPS = 1$

$MPS = 1 - b$

6.3.12 Derivation of a Straight Line Saving Curve from Consumption Curve

In fig 6.10, CC_1 curve is consumption curve. It shows consumption at different levels of income. 45° line represents income line. Every point on this line shows income-expenditure identity. Since saving is the difference between income and consumption, we can find savings at different levels of income by taking the **vertical difference** between the consumption curve (CC_1) and income line (*i.e.*, 45° line). At point B, income and

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consumption expenditure are equal. It is also called **breakeven point**. Therefore, saving at *OM* income is zero. To the left of point *B*, consumption expenditure is greater than income. Thus, savings become negative. At OM_0 income, saving is negative (*i.e.*, M_0R' which is equal to *NR*).

At point *C*, consumption expenditure is *OC*. In other words, at zero level of income, consumption expenditure is *OC*. It is equal to dissaving *OS*. Savings are positive at OM_1 level of income which is equal to $M_1R'_1$ (or R_1N_1).

By plotting the difference between income line and consumption curve at different levels of income, we can derive the saving curve. By joining points *S*, *R'*, *B'* and R'_1 and extending the straight line upwards we get saving curve SS_1. It is a straight line curve and parallel to consumption curve (CC_1).

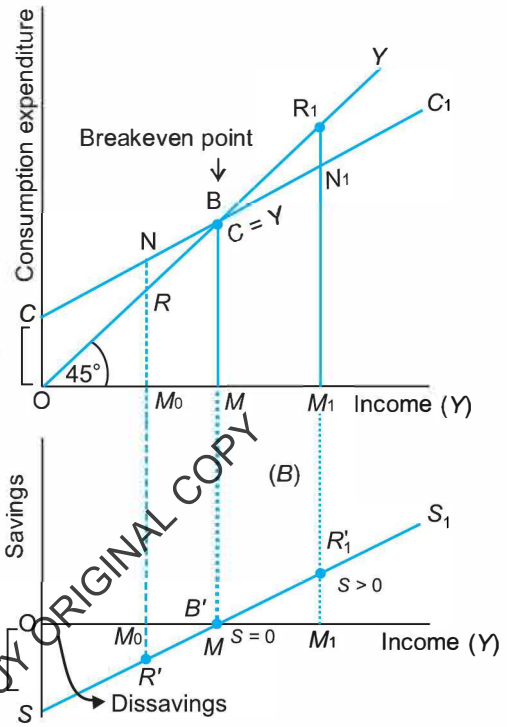


Fig. 6.10 Derivation of Saving Curve from Consumption Curve

6.3.13 Derivation of Consumption Curve from Saving Curve

Since difference between income and saving is equal to consumption expenditure, we can derive consumption curve from taking vertical difference between x-axis and saving curve, SS_1.

At zero income level, saving is negative (*i.e.*, dissaving) which is equal to *OS*. It is equal to consumption expenditure *i.e.*, ($\bar{c}$) at zero level of income. We can plot point *C*, equal to *OS* dissavings at zero income level.

At *OM* income level, saving is zero. It implies that consumption expenditure = Income. We find another point *B* at which *C* = *Y* and *S* = 0. It is called **breakeven point**. Similarly, we can find many other points.

By joining points *C* and *B* and extending it further we get consumption curve, CC_1 (See Fig. 6.11).

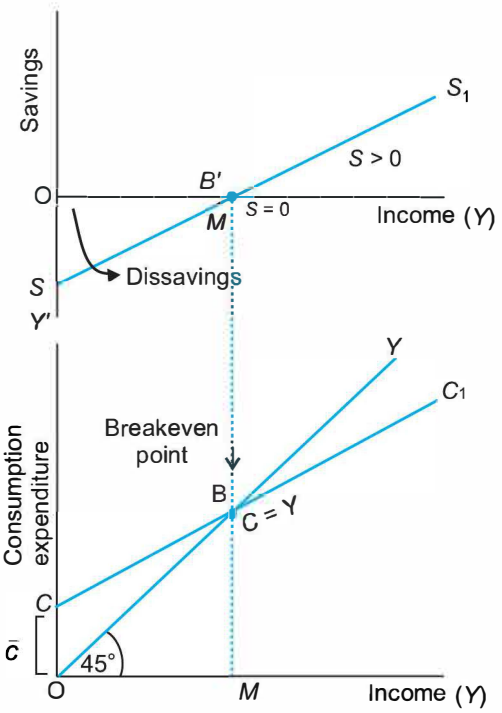


Fig. 6.11 Derivation of Consumption Curve From Saving Curve

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6.3.14 Solved Numerical Problems on Consumption and Savings

Illustration 1. If disposable income is ₹ 100 and consumption expenditure is ₹ 80, find *APS*. (*2001*)

Solution.

Given Y_d = ₹ 100, C = ₹ 80,
then saving = $Y_d - C$ = ₹ 100 − ₹ 80 = ₹ 20.

$$APS = \frac{S}{Y} = \frac{20}{100} = \frac{1}{5} = ₹\ 0.2 = 20\%$$

It means that 20% of the income is being saved.

Illustration 2. If disposable income is ₹ 1,000 and consumption expenditure is ₹ 700, find out *APS*. (*2001*)

Solution.

Y_d = ₹ 1,000, C = ₹ 700
then $S = Y_d - C$ = ₹ 1,000 − ₹ 700 = ₹ 300

$$APS = \frac{S}{Y} = \frac{300}{1,000} = ₹\ 0.3 = 30\%.$$

It means that 30% of the income is saved.

Illustration 3. If disposable income is ₹ 500 and saving ₹ 100, find *APC*. (*2001*)

Solution.

Y_d = ₹ 500, S = ₹ 100
then $C = Y_d - S$ = ₹ 500 − ₹ 100 = ₹ 400.

$$APC = \frac{C}{Y} = \frac{400}{500} = \frac{4}{5} = 0.8 = 80\%$$

It means that 80% of the income is spent on consumption.

Illustration 4. If disposable income is ₹ 1,000 and saving ₹ 250, find out *APC*. (*2001*)

Solution.

Given Y_d = ₹ 1,000, S = ₹ 250
then $C = Y_d - S$ = ₹ 1,000 − ₹ 250 = ₹ 750

$$APC = \frac{C}{Y} = \frac{750}{1,000} = 0.75 = 75\%$$

It means that 75% of the income is spent on consumption.

Illustration 5. If *MPS* is one, how much is *MPC*? (*2002*)

Solution.

$$MPC + MPS = 1 \Rightarrow 1 - MPS = MPC$$
$$\Rightarrow 1 - 1 = 0 \Rightarrow MPC = 0$$

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Illustration 6. If $APC = 0.75$, how much is APS?

Solution.

$$APC + APS = 1 \quad \Rightarrow 1 - APC = APS$$

$$\Rightarrow \quad 1 - 0.75 = 0.25 \Rightarrow \quad APS = 0.25$$

Illustration 7. Calculate *APC*, *MPC* and *MPS* at different income levels.

NI (₹)	Consumption (₹)
100	95
110	104
120	112
130	119
140	125
150	130

Solution.

NI (₹)	Consumption (₹)	$APC = \frac{C}{Y}$	ΔC (₹)	ΔY (₹)	$MPC = \frac{\Delta C}{\Delta Y}$	$MPS = 1 - MPC$
100	95	$\frac{95}{100} = 0.95$	–	–	–	–
110	104	$\frac{104}{110} = 0.94$	9	10	$\frac{9}{10} = 0.9$	0.1
120	112	$\frac{112}{120} = 0.93$	8	10	$\frac{8}{10} = 0.8$	0.2
130	119	$\frac{119}{130} = 0.91$	7	10	$\frac{7}{10} = 0.7$	0.3
140	125	$\frac{125}{140} = 0.89$	6	10	$\frac{6}{10} = 0.6$	0.4
150	130	$\frac{130}{150} = 0.86$	5	10	$\frac{5}{10} = 0.5$	0.5

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6.4 INVESTMENT (*I*)

Investment means expenditures made on purchase of new capital assets like machines, tools, equipments, inventories, etc. It means an addition to the existing stock of assets to increase productive capacity of an economy.

6.4.1 Types of Investment

1. **Induced Investment.** It is investment made with the motive of earning profits, as done by the private sector. It depends upon profit expectation. If national income rises, induced investment goes up. Induced investment curve is upward sloping.
2. **Autonomous Investment.** It is investment which is made irrespective of the level of income. It is a constant and given amount is shown by a horizontal line. It is generally

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done by the government sector with social welfare motive. It depends upon the need for public utility works, changes in population, etc. Symbolically,

$$I = \bar{I}$$

where,

$\bar{I}$ = Autonomous investment. It is fixed at $O\bar{I}$ level.

Graphically, the autonomous investment curve is shown in Fig. 6.12 Panel *A* as a horizontal line parallel to the *x*-axis. $O\bar{I}$ is the amount of autonomous investment.

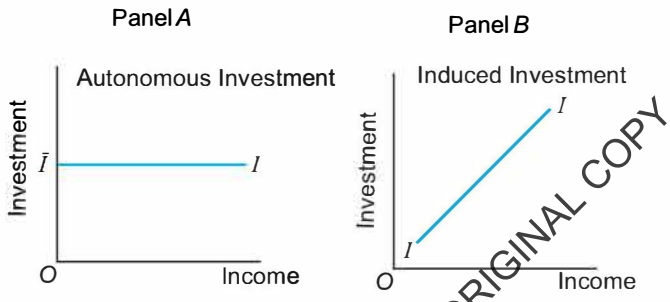


Fig. 6.12 Types of Investment

Panel *B* shows upward sloping induced investment curve. Induced investment is determined by:

(*a*) *MEI*

(*b*) Rate of interest (*i*).

Table. 6.1 **Induced Investment *vs.* Autonomous Investment**

Basis	Induced Investment	Autonomous Investment
Motive	It is done for profit.	It is done for social welfare.
Income Elasticity	It is income elastic, i.e., increase in income level raises its level.	It is unaffected by changes in income level.
Investment curve	Its curve slopes upwards as it is income elastic.	Its curve is parallel to X-axis as it is income inelastic.
Sector	It is generally done by the private sector.	It is generally done by the government sector.

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6.4.2 Ex-ante Saving and Investment

The savings which are planned or desired or intended to be made by all the households in the economy at different levels of income during a period of time are called **ex-ante** savings or **planned** savings. These are planned at the beginning of the period.

The investment which is planned or desired or intended to be made by all the producing

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units in the economy during a period of time is called **ex-ante** investment. It is also called planned investment. It is planned at the beginning of the period.

Ex-ante savings and investment may or may not be equal. **Equilibrium in the economy takes place only when these two are equal.**

6.4.3 Ex-post Saving and Investment

The savings which have been **actually** saved by all households in the economy at different levels of income during a period of time are called **ex-post** savings. These are also called **actual** savings. It is measured at the **end** of the period.

The investment which has been **actually** invested by all the producing units in the economy during a period of time is called **ex-post** investment. It is also called **actual** investment. It is measured at the **end** of the period.

Actual savings and actual investment are **always equal** in the economy.

Saving and investment activities are generally done by different people for different reasons. For this reason a distinction is drawn between what the households plan to save and what they actually save. Similarly, in investment a distinction is drawn between desired and actual investment.

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6.5 DETERMINATION OF EQUILIBRIUM LEVEL OF INCOME, OUTPUT AND EMPLOYMENT (UNDER SHORT-RUN)

6.5.1 AD-AS Approach

According to this approach, under short-run fixed price, the equilibrium level of national income is determined at that point where aggregate demand (AD) equals aggregate supply (AS).

Assumptions:

Assumptions of the theory are:

(*i*) The price level in the economy is fixed.

(*ii*) Theory is applicable only under short-run.

(*iii*) There is no government. There are only two sectors–household and firm–in the economy.

(*iv*) There is no foreign trade. It means economy is closed.

Explanation:

Under short-run fixed price, the ex-ante AD is the sum total of ex-ante consumption expenditure (C) and ex-ante investment expenditure (I).

Thus,

AD = C + I.

Equilibrium level of national income is determined by that point where aggregate demand is equal to aggregate supply. Symbolically, the equilibrium condition is given as:

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$$AD = AS$$

or $$C + I = C + S$$

Equilibrium is graphically shown in Fig. 6.13.

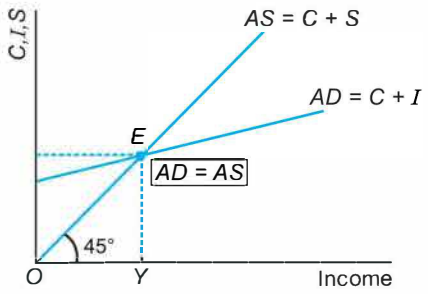


Fig. 6.13 Determination of Equilibrium Level of National Income by *AD* = *AS* Approach

In the figure,

AD = The aggregate demand curve is the vertical summation of consumption (*C*) and investment (*I*) demand schedules at each level of income. It is a **positively sloping line originating from the y-axis.**

AS = The aggregate supply or national income curve is the sum total of consumption and saving. It is a positively sloping 45° line from the origin.

Point *E* = The point of equilibrium or point of ***effective demand***, where,

$$AD = AS$$

or $$C + I = C + S$$

Equilibrium occurs when planned spending equals planned output.

Its economic meaning is that what consumers decide to spend (*AD*) is equal to what producers have produced (*AS*) in the market. This is a stable equilibrium. It is at less than full employment level.

OY = The ***equilibrium level of national income.*** There is no further increase or decrease in income. This is the maximum income.

EY = This is the effective demand given by point of equilibrium where *AD* = *AS*.

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6.5.2 The Adjustment Mechanism when *AD* is Not Equal to *AS*

Any deviation from this equilibrium level of income with the given *AD* and *AS* curves will be unstable. Two unstable situations can be:

(*a*) If *AD* < *AS*

This situation is shown by *CN* line in Fig. 6.14.

At income of *ON*,

AD = *MN*

and *AS* = *CN*

It is clear that *AS* > *AD*

Thus, Excess supply = *CM*

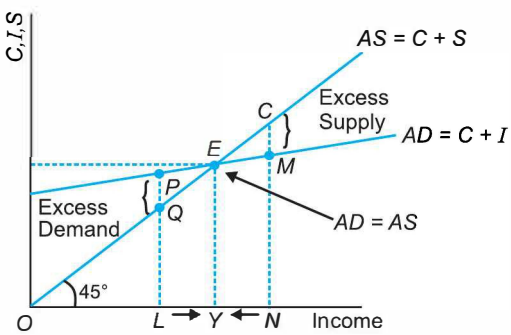


Fig. 6.14 Two Situations when *AD* is Not Equal to *AS*

In this situation the economy will face recession. There will be unsold stocks of goods. The producer will reduce the use of factors of production to cut down the production level in the next time period. This will reduce the income level from

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ON to *OY*. The stability of the equilibrium will be restored at point *E*. **Thus, when *AD* < *AS*, national income tends to fall.**

(*b*) If *AD* > *AS*

This situation is shown by *PL* line in Fig. 6.14.

At income level of *OL*,

$$AD = PL$$

and $$AS = QL$$

It is clear that $AD > AS$

Thus, Excess demand $= PQ$

This will bring abnormal profits to the producers who will expand the level of production in the next time period. The increase in output will raise the income level from *OL* to *OY*. The stability of the equilibrium will be restored at point *E* where *AD* = *AS*. **Thus, when *AD* > *AS*, national income tends to increase.**

In Keynesian Theory, the level of national income or *AS* is demand determined. National Income or *AS* is assumed to be given and constant in the short-run. Thus, it is the level of *AD* which influences the level of output, income and employment. If *AD* for goods and services rises then employment will increase. This will raise the level of output, which in turn will raise the income and vice versa.

Thus, there is a *direct* relationship between *AD* and the level of employment, output and income.

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6.5.3 Savings–Investment Approach

According to Keynes, equilibrium level of national income can be alternatively determined by the point **where planned investments (*I*) equals planned savings (*S*).** Both *AD* = *AS* and *S* = *I* approaches give identical national income solution. Since in equilibrium:

$$\boldsymbol{AD = AS}$$

or $$\boldsymbol{C + I = C + S}$$

or $$\boldsymbol{I = S}$$

i.e., **Planned *I* = Planned *S***

or Ex-ante *I* = Ex-ante *S*

Equilibrium of *S* and *I* is shown graphically in Fig. 6.15

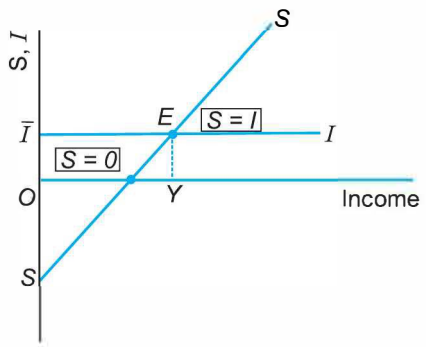


Fig. 6.15 Determination of Equilibrium level of National Income where *S* = *I*

where,

$\bar{I}I$ = The planned investment curve in the economy which is given and constant and is shown by a horizontal line parallel to *x*-axis.

SS = The planned or ex-ante savings curve which initially shows dissavings, then zero savings and then positive savings as income rises.

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Point E = The point of equilibrium where planned saving = planned investment. Its economic meaning is that an economy invests what it has saved.

OY = The equilibrium level of national income. This is the maximum income.

6.5.4 The Adjustment Mechanism when Savings is Not Equal to Investment

Any deviation from the equilibrium level of income, where $S = I$, will bring instability. Two unstable situations are:

(*a*) If $S > I$

When savings are more than the investment, it means that the households are saving more than what the firms are wanting to invest. It is shown in Fig. 6.16

At OP income level,

Realised savings > Planned investment

or $MP > NP$

$\therefore$ Unplanned investment = MN

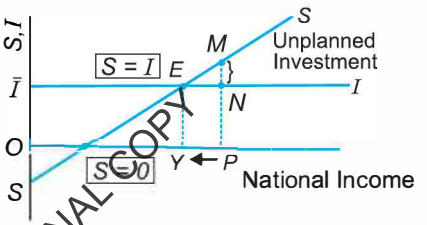


Fig. 6.16 Situation where $S > I$, National Income Tends to Fall

The firm will therefore, reduce investment in the next period. It will lay-off men and reduce production. This will reduce national income level to the equilibrium level of OY, where **planned S = planned I.**

(*b*) If $S < I$

When investment is more than the savings, it means that the households are saving less than what the firms are wanting to invest. It is shown in Fig. 6.17.

At OT income level,

Realised savings < Planned investment

or $BT < RT$

$\therefore$ Unplanned disinvestment = RB

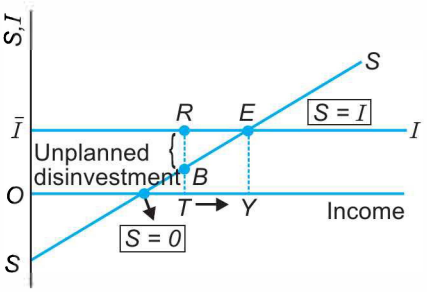


Fig. 6.17 Situation where $S < I$, National Income Tends to Rise

The firm will, therefore, expand its investment and production in the next time period. It will hire more factors. This will raise the income level to the equilibrium level of OY, where **planned S = planned I.**

6.5.5 Numerical Examples on Equilibrium Level

Example 1. Suppose that the consumption function of the economy is:

$C = 1000 + 0.67Y$ and investment expenditure is ₹ 200 crore.

The associated savings function is

$S = -1000 + 0.33Y$

Column (2) represents the level of planned consumption at various levels of income. The values in column (2) are derived from the consumption function used above. Column (3)

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represents the levels of planned saving at various levels of income. The values in column (3) are derived from the savings function used above. Column (5) is a reproduction of column (1). Column (6) shows the level of aggregate demand at various levels of income– it is the sum of consumption demand in column (2) and investment demand in column (4). It shows what firms actually managed to sell.

Table. Determination of Output (*All Fig. in* ₹ *crores*)

Output and Income	Planned Consumption	Planned Saving (3) = (1) − (2)	Planned Investment	*AS* (5) = (1)	*AD* (6) = (2) + (4)	Tendency of Output to
(1)	(2)	(3)	(4)	(5)	(6)	(7)
4200	3800	400	200	4200	4000	Decrease
3900	3600	300	200	3900	3800	Decrease
3600	3400	200	200	3600	3600	Equilibrium
3300	3200	100	200	3300	3400	Increase
3000	3000	0	200	3000	3200	Increase
2700	2800	−100	200	2700	3000	Increase

The level of income at which consumption is exactly equal to income (that is, all income is consumed), and therefore, savings is exactly equal to zero is known as the break-even level of income. In our example, the break-even level of income is ₹ 3000 crores.

Now, each change of income of ₹ 300 crores causes a change of ₹ 100 crores in savings, and a change of ₹ 200 crores in consumption. Thus *MPS* is a constant and is equal to 1/3 and *MPC* is a constant and is equal to 2/3.

Investment is assumed to be exogenous. Firms plan to invest a constant amount of ₹200 crores as shown in column (4). That is, at each level of income, firms plan to purchase ₹ 200 crores of investment goods.

Consider the top row of the Table. If firms are producing ₹ 4200 crores of output, then the planned spending or aggregate demand is only ₹ 4000 crores. In this situation, there will be an unplanned accumulation of inventories to the tune of ₹ 4200 crores − ₹ 4000 crores = ₹ 200 crores. Firms will respond to this unplanned inventory build-up by scaling down their operations and thus output will decrease.

The opposite case is represented by the bottom row of Table. Here, firms are producing ₹ 2700 crores of output but aggregate demand is ₹ 3000 crores. In this situation, there will be an unplanned decrease in inventories to the tune of ₹ 3000 crores − ₹ 2700 crores = ₹ 300 crores. Firms will respond to this unplanned inventory decrease by expanding their operations, thus causing an increase in output.

Thus, when firms as a whole are temporarily producing more than they can sell, they will contract their operations, causing output to fall. When they are temporarily selling more than their current production, they will expand their operations, causing output to rise.

Only when the level of output in column (5) is equal to aggregate demand in column (6) will output be in equilibrium. Firms sales will be just enough to justify continuing their

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current level of aggregate output. Thus, aggregate output will neither expand nor contract, and will be in equilibrium. The equilibrium level of output in our example is ₹ 3600 crores.

Illustration 1. Let $C = 20 + 0.25Y$

$I =$ ₹ 100

Find: (*a*) Equilibrium level of income

(*b*) The level of Consumption at equilibrium

(*c*) the level of saving at equilibrium.

Solution. (*a*) $Y = C + I$

$\Rightarrow Y = 20 + 0.25Y + 100$

$\Rightarrow Y - 0.25Y = 120$

$\Rightarrow Y = 120/0.75 =$ ₹ 160

(*b*) $C = 20 + 0.25Y$

$= 20 + 0.25 \times 160$

= ₹ 60

(*c*) $S = -20 + 0.75Y$

$= -20 + 0.75 \times 160 =$ ₹ 100

Illustration 2. Let $S = -10 + 0.5Y$

$I = -3 + 0.4Y$

Find equilibrium level of income?

Solution. $S = I$ … in equilibrium.

$-10 + 0.5Y = -3 + 0.4Y$

$0.5 - 0.4Y = -3 + 10$

$Y = 7/0.1 =$ ₹ 70

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6.6 CONCEPTS OF FULL EMPLOYMENT, VOLUNTARY UNEMPLOYMENT AND INVOLUNTARY UNEMPLOYMENT

Full employment. It refers to a situation in which every able-bodied person who is willing to work at the prevailing rate of wages is, in fact, employed. Full employment implies absence of involuntry unemployment. That is why *full employment is also defined as a situation where there is no involuntary unemployment.*

Voluntary unemployment. It refers to those persons who are not willing to do work although suitable work is available for them. In other words, they are voluntarily unemployed *i.e.,* unemployed of their own will. Such persons are not included in labour force of the country.

Involuntary unemployment. It occurs when those who are willing to work at the going wage rate do not get work. Hence, they are unemployed against their wishes. The magnitude of unemployment in an economy, in fact, refers to the magnitude of involuntary unemployment in the country. According to Keynes, involuntary unemployment arises due to insufficiency of effective demand which can be solved by stepping up aggregate demand through government intervention.

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6.7 UNDER EMPLOYMENT EQUILIBRIUM

It means equality between AD and AS before the full employment equilibrium point. In this situation, AD is less than full employment level of output. In other words, economy's resources are not fully employed.

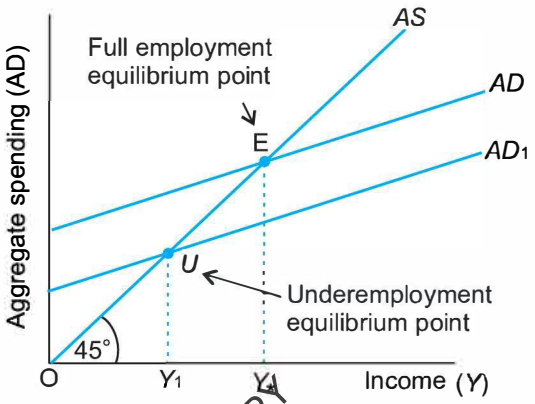


Fig. 6.18 Underemployment Equilibrium

In Fig. 6.18, suppose that full employment equilibrium is at point '*E*' where *AD* = *AS*. OY^* level of output is called full employment equilibrium level of output. It is because *AD* is EY^* which is equal to the full employment level of output OY^*. In this way economy is in full employment equilibrium situation. All those able and willing to work at prevailing wage rate are employed. There is no under employment. When actual *AD* curve cuts *AS* curve at point *U*, it is less than full employment equilibrium. Point *U*, is called under employment equilibrium point.

6.8 INVESTMENT MULTIPLIER (K)

6.8.1 Meaning of Investment Multiplier

A change in the investment spending will affect output and employment levels. It is logical that an increase in fixed business investment will increase the level of output and employment through increase in productive capacity. Conversely, a decrease in investment will decrease the level of output and employment.

The operation of the multiplier ensures that a change in investment causes a change in output (or national income) by an amplified amount, which is a multiple of the change in investment.

Thus,

$$\Delta Y = K.\ \Delta I$$

Where ΔY = change in national income

ΔI = change in investment

K = investment multiplier.

Investment multiplier is the ratio of change in national income (ΔY) to change in investment (ΔI) *i.e.*,

$$K = \frac{\Delta Y}{\Delta I}$$

Simple Derivation of Investment Multiplier

$$Y = C + I$$

or $$\Delta Y = \Delta C + \Delta I \qquad \ldots(1)$$

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Divide equation (1) by ΔY on both sides, we get:

$$\frac{\Delta Y}{\Delta Y} = \frac{\Delta C + \Delta I}{\Delta Y}$$

$$1 = \frac{\Delta C}{\Delta Y} + \frac{\Delta I}{\Delta Y}$$

$$1 = MPC + \frac{\Delta I}{\Delta Y}$$

$$\frac{\Delta I}{\Delta Y} = 1 - MPC$$

or $$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

Since by definition $\frac{\Delta Y}{\Delta I} = K$, we get:

or $$\boldsymbol{K = \frac{1}{1 - MPC}}$$

or $$\boldsymbol{K = \frac{1}{MPS}}$$ since $MPC + MPS = 1 \Rightarrow MPS = 1 - MPC$

6.8.2. Relationship Between Investment Multiplier and *MPC*

There is **direct relationship between investment multiplier and *MPC*** *i.e.*,

$$K = \frac{1}{1 - MPC}$$

The value of *MPC* varies from 0 to 1. *i.e.*, $0 < MPC < 1$ and value of K varies from 1 to ∞ *i.e.*, $1 < K < \infty$

MPC	K
0	$K = \frac{1}{1 - MPC} = \frac{1}{1 - 0} = 1$
0.2	$K = \frac{1}{1 - 0.2} = \frac{1}{0.8} = 1.25$
0.5	$K = \frac{1}{1 - 0.5} = \frac{1}{0.5} = 2$
0.8	$K = \frac{1}{1 - 0.8} = \frac{1}{0.2} = 5$
1.0	$K = \frac{1}{1 - 1.0} = \frac{1}{0} = \propto$

The table shows that **as value of *MPC* increases, value of *K* increases** and vice versa.

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6.8.3 Relationship between Investment Multiplier and *MPS*

There is **inverse relationship between investment multiplier and *MPS*** *i.e.*,

$$K = \frac{1}{MPS}$$

The value of *MPS* varies from zero to one and value of *K* varies from one to infinity.

MPS	*K*
1.0	$K = \frac{1}{1} = 1$
0.8	$K = \frac{1}{0.8} = 1.25$
0.5	$K = \frac{1}{0.5} = 2$
0.2	$K = \frac{1}{0.2} = 5$
0.0	$K = \frac{1}{0} = \infty$

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The table shows that as **value of *MPS* decreases from 1 to zero, value of *K* increases from one to infinity** and vice versa.

Some Important Points about Multiplier are:

1. Multiplier works in both directions–forward and backward.
2. There is an **inverse relationship** between *MPS* and the size of the multiplier.
3. There is **direct relationship** between *MPC* and the size of the multiplier.
4. When *MPC* = *MPS* then *MPC* = *MPS* = 0.5 ∴ *K* = 2
5. When *MPC* = 0.8, *MPS* = 0.2, *K* = 5
6. If *MPC* : *MPS* = 3:1
   It implies $MPC = \frac{3}{4}$ and $MPS = \frac{1}{4}$
7. If 75% of rise in income is spent on consumption, it implies $MPC = \frac{\Delta C}{\Delta y} = 75\% = \frac{3}{4}$
8. When *MPS* = 0 then *K* = ∞.
   It implies there is infinite change in income.
9. When *MPS* = 1, *K* = 1. It implies income will increase just once.

6.8.4 Multiplier Mechanism

The working of multiplier depends on the fact that expenditure of a person is income of another person. A numerical example will enable us to see the operation of the multiplier.

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Let the *MPC* be at 4/5. Suppose there is an increase in investment of ₹ 1000, which results in the construction of a new building. Then, the builder, the architect and the labourers together will get an increase in income of ₹ 1000. Since the *MPC* is 4/5, they will together spend ₹ 800 (4/5 of ₹ 1000) on new consumption goods. The producers of those consumption goods will thus have an increase of ₹ 800 in their incomes. Since their *MPC* is also 4/5, they will in turn spend ₹ 640 (4/5 of ₹ 800 or 4/5 of 4/5 of ₹ 1000). This will cause an increase in income of other people by ₹ 640. This process will go on with each new round of spending (and therefore increase in investment) being 4/5 of the previous round.

Thus, an endless chain of secondary consumption spending is set in motion by the primary investment of ₹ 1000. However, not only is the chain of secondary consumption spending endless, it is also ever-diminishing. Eventually, the sum of the secondary consumption expenditures will be a finite amount.

We can calculate the total increase in consumption plus investment spending and therefore the total increase in income is as follows:

Table. Working of Multiplier

Round	Increase in investment (ΔI)	Increase in income (ΔY)	Increase in consumption expenditure (ΔC)
I	1000	1000	800
II	–	800	640
III	–	640	512
IV	–	512	409.6
…	…	…	…
…	…	…	…
…	…	…	…
All rounds	ΔI = 1000	ΔY = 5000	ΔC = 4000

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We have said that the chain of secondary consumption spending is an endless ever-diminishing chain, whose sum is a finite amount.

We may find the sum of the total increase in spending by using the formula for the sum of an infinite geometric progression.

The term in square brackets is of the form of the sum of an infinite geometric progression, whose first term is 1 and where constant multiplier '*r*' or *MPC* is 4/5.

The formula for the sum of such an infinite geometric progression is 1/(1−r). In our case *MPC* or $r = 4/5$, therefore the sum of the geometric progression is $1/[1 - (4/5)] = 5$

Replacing the term in the square brackets by 5, we have

$$\Delta Y = ₹\ 1000 \times 5$$

$$\Delta Y = ₹\ 5000$$

We can see that with an *MPC* of 4/5, the multiplier is 5.

We may also express multiplier in terms of the marginal propensity to save, that is *MPS*

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$$\text{Multiplier} = \frac{1}{(1 - MPC)}$$

Since $MPS = 1 - MPC$, we have

$$\text{Multiplier} = \frac{1}{MPS}$$

i.e., if *MPS* were $1/x$, then the multiplier would be x.

In our example, the *MPS* is 1/5. Let the investment expenditure increase by ₹ 1000 crores. Planned saving will have to rise till it equals the new and higher level of investment, in order to bring output to a new equilibrium. The only way that saving can rise is for income to rise. With an *MPS* of 1/5 and an increase in investment of ₹ 1000 crores, income must rise by ₹ 5000 crores to bring forth ₹ 1000 crores of additional saving to match the new investment. Hence, at equilibrium, ₹ 1000 crores of additional investment induces ₹ 5000 crores of additional income, is line with our arithmetic multiplier.

6.8.5 Solved Numerical Problems on Multiplier

Illustration 1. If $MPC = \frac{1}{2}$, what is the value of *K*?

Solution. Since $MPC + MPS = 1$; and $MPC = \frac{1}{2}$ then *MPS* will be equal to $\frac{1}{2}$.

The value of *K* will be:

$$\frac{1}{(1 - MPC)} = \frac{1}{1 - 1/2} = 2$$

Alternatively, $K = \frac{1}{MPS} = \frac{1}{1/2} = 2$

Illustration 2. If $MPS = 0.25$, what is the value of multiplier?

Solution. If $MPC = \frac{3}{4}$, then $MPS = \frac{1}{4}$ and *K* can be calculated by both the formulae which will give same result, *i.e.,* $K = 4$.

Illustration 3. If $MPS = 0.4$, what is the value of multiplier?

Solution.

$MPC = 0.6$ and *K* can be calculated by both the formulae which will give same result. That is,

$$K = \frac{1}{(1 - MPC)} = \frac{1}{1 - 0.6} = \frac{1}{0.4} = 2.5$$

or $K = \frac{1}{MPS} = \frac{1}{0.4} = 2.5.$

Illustration 4. If in an economy $MPC = 0.8$, investment increases by ₹ 1,000 crores, calculate the total increase in income.

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Solution. $K = \frac{1}{MPS} = \frac{1}{0.2} = 5$

given ΔI = ₹ 1,000 crores

$K = \frac{\Delta Y}{\Delta I}$ $\quad\therefore\quad \Delta Y = K \times \Delta I = (5) \times (1{,}000) =$ ₹ 5,000 crores

Illustration 5. In an economy, $MPC = 0.75$. What will be the effect on total income if investment increases by ₹ 300 crores?

Solution.

$$K = \frac{1}{MPS} = \frac{1}{0.25} = 4$$

$\therefore \quad \Delta Y = K \times \Delta I = 4 \times 300 =$ ₹ 1,200 crores

Illustration 6. In an economy investment increases by ₹ 200 crores. As a result, total income increases by ₹ 1,000 crores. Calculate *MPC*.

Solution.

$$K = \frac{\Delta Y}{\Delta I} = \frac{1{,}000}{200} = 5$$

$$K = \frac{1}{MPS}$$

$$5 = \frac{1}{MPS} \Rightarrow MPS = \frac{1}{5} = 0.2 \qquad \therefore MPC = 0.8$$

Illustration 7. Given that national income is ₹ 80 crore and consumption expenditure ₹ 64 crore, find out average propensity to save. When income rises to ₹ 100 crore and consumption expenditure to ₹ 78 crore, what will be the average propensity to consume and the marginal propensity to consume? (*Delhi 2011*)

Solution.

(*a*) $APS = \frac{S}{Y} = \frac{80-64}{80} = 0.20$

After change:

(*b*) $APC = \frac{30}{50} = 0.6 = 0.78$

(*c*) $MPC = \frac{\Delta C}{\Delta Y} = \frac{14}{20} = 0.70$

Illustration 8. In an economy the marginal propensity to consume is 0.75. Investment expenditure in the economy increases by ₹ 75 crore. Calculate the total increase in national income. (*AI 2011*)

Solution.

Multiplier = $\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$

$$\Delta Y = \Delta I . \frac{1}{1 - MPC}$$

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$$\Delta Y = 75 \times \frac{1}{1-0.75}$$

$\Delta Y = 75 \times 4 = ₹\ 300$ crore.

Illustration 9. An economy is in equilibrium. Its consumption function is $C = 300 + 0.8\ Y$ where C is consumption expenditure and Y is income and investment is ₹ 700. Find national income. (*Foreign 2011*)

Solution.

$$C = 300 + 0.8Y$$
$$I = 700$$
$$Y = C + I$$
$$Y = 300 + 0.8Y + 700$$
$$Y - 0.8Y = 1000$$
$$Y = \frac{1000}{0.8} = ₹\ 1250$$

Illustration 10. In an economy 75 per cent of the increase in income is spent on consumption. Investment is increased by ₹ 1,000 crore. Calculate: (*Delhi 2011*)

(*a*) total increase in income

(*b*) total increase in consumption expenditure.

Solution.

$MPC = \frac{3}{4}, MPS = \frac{1}{4} \therefore K = 4$

(*a*) $\Delta Y = \Delta I \,.\, K$

$= 1000 \times 4$

$= ₹\ 4000$ crore

(*b*) Given that $\Delta Y = \Delta C + \Delta I$

$$\Delta C = \Delta Y - \Delta I$$
$$= 4000 - 1000$$
$$= ₹\ 3000 \text{ crore}$$

Alternative formula for calculation is:

$$\Delta C = \Delta Y \times MPC$$
$$= 4000 \times 0.75 = ₹\ 3000 \text{ crore}$$

Illustration 11. In an economy the equilibrium level of income is ₹ 12,000 crore. The ratio of marginal propensity to consume and marginal propensity to save is 3 : 1. Calculate the additional investment needed to reach a new equilibrium level of income of ₹ 20,000 crore. (*AI 2010*)

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Solution. Given:

Y = ₹ 12,000 crore

$MPC : MPS = 3 : 1$

ΔI = ?

New equilibrium income = ₹ 20,000 crore.

$\therefore \quad \Delta Y = 20{,}000 - 12{,}000 = ₹\ 8{,}000$ crore

$$k = \frac{1}{MPS} = \frac{1}{0.25} = 4$$

$$k = \frac{\Delta Y}{\Delta I}$$

$$\Rightarrow \ 4 = \frac{8000}{\Delta I} \Rightarrow \Delta I = \frac{8000}{4} = ₹\ 2000 \text{ crore}$$

$\therefore$ additional investment requirement is of ₹ 2000 crore.

Illustration 12. In an economy the consumption function is $C = 500 + 0.75\,Y$ where C is consumption expenditure and Y is income. Calculate the equilibrium level of income and consumption expenditure when investment expenditure is ₹ 5000. (*Foreign 2010*)

Solution. $C = 500 + 0.75Y$

$I = 5000$

Equilibrium takes place where:

$C = I$

$500 + 0.75Y = 5000$

$\Rightarrow \quad Y = 6000$

$\therefore \quad C = 500 + 0.75 \times 6000 = 5000$

Illustration 13. Complete the following table: (*Delhi 2009*)

Income (₹)	Saving (₹)	Marginal Propensity to Consume	Average Propensity to Save
0	−12	.....	.....
20	−6	.....	.....
40	0	.....	.....
60	6	.....	.....

Solution.

Income (Y) (₹)	ΔY (₹)	Saving (S) (₹)	C = Y − S (₹)	ΔC (₹)	$MPC = \frac{\Delta C}{\Delta Y}$	$APS = \frac{S}{Y}$
0	–	− 12	12	–	–	–
20	20	− 6	26	14	$\frac{14}{20} = 0.7$	$\frac{-6}{20} = -0.3$
40	20	0	40	14	$\frac{14}{20} = 0.7$	$\frac{0}{40} = 0$
60	20	6	54	14	$\frac{14}{20} = 0.7$	$\frac{6}{60} = 0.1$

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Rule: 1. $Y = C + S \Rightarrow C = Y - S$

2. $MPC = \frac{\Delta C}{\Delta Y}$

3. $APS = \frac{S}{Y}$

Illustration 14. Given consumption function $C = 100 + 0.75\ Y$ (where C = consumption expenditure and Y = national income) and investment expenditure ₹ 1000, calculate:

(*Delhi 2009*)

(*a*) Equilibrium level of national income.

(*b*) Consumption expenditure at equilibrium level of national income.

Solution.

(*a*) $Y = C + I$

$\Rightarrow \quad Y = [100 + 0.75Y] + 1000$

$\Rightarrow \quad Y - 0.75Y = 1100$

$\Rightarrow \quad Y = \frac{1100}{0.25} = ₹\ 4400$

(*b*) $C = 100 + 0.75Y$

$= 100 + 0.75 \times 4400$

$= 100 + 3300 = ₹\ 3400$

Illustration 15. In a two-sector economy, the consumption and investment functions are as follows:

$Y = C + I$; $C = 50 + .8Y$; $I = 50$

Find (*i*) the equilibrium level of income; (*ii*) the level of consumption at equilibrium and (*iii*) the level of saving at equilibrium.

Solution.

(*i*) $Y = 50 + 0.8Y + 50$

$\Rightarrow Y - 0.8Y = 100$

$\Rightarrow \quad Y = \frac{100}{0.25} = ₹\ 500$

(*ii*) $C = 50 + 0.8 \times 500$

$= ₹\ 450$

(*iii*) $S = -50 + 0.2Y$

$= -50 + 0.2 \times 500$

$= ₹\ 50$

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Illustration 16. Complete the following table: (*Delhi 2009*)

Income (₹)	Saving (₹)	*MPS*	*APS*
0	–10	—	—
50	20	—	—
100	50	—	—
150	80	—	—

Solution.

Income (₹)	S (₹)	$APS = \frac{S}{Y}$	ΔS (₹)	ΔY (₹)	$MPS = \frac{\Delta S}{\Delta Y}$
0	–10	—	—	—	—
50	20	0.4	30	50	0.6
100	50	0.5	30	50	0.6
150	80	0.5	30	50	0.6

Illustration 17. Complete the following table:

Income (₹)	Saving (₹)	*MPS*	*APC*
0	–15	—	—
50	20	—	—
100	55	—	—
150	90	—	—

Solution.

Income (₹)	Saving (₹)	ΔY (₹)	ΔS (₹)	$C = Y - S$ (₹)	$MPS = \frac{\Delta S}{\Delta Y}$	$APC = \frac{C}{Y}$
0	–15	–	–	15	–	–
50	20	50	35	30	0.7	$\frac{30}{50} = 0.6$
100	55	50	35	45	0.7	$\frac{45}{100} = 0.45$
150	90	50	35	60	0.7	$\frac{60}{150} = 0.4$

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Illustration 18. Complete the following table:

Income (₹)	*MPS*	Saving (₹)	*APC*
0	—	–10	—
100	0.75	—	—
200	0.75	—	—
300	0.75	—	—

Solution.

Income (₹)	*MPS*	*S* (₹)	$APC = \frac{C}{Y}$	$C = Y - S$ (₹)
0	—	–10	—	10
100	0.75	65	0.35	35
200	0.75	140	0.35	70
300	0.75	215	0.28	85

Illustration 19. In an economy, every time income rises, 60 per cent of rise in income is spent on consumption. Now suppose in the same economy investment rises by ₹ 600 crores. Calculate the following:

(*i*) Change in income

(*ii*) Change in saving.

Solution.

$MPC = 60\% = 0.6$

$\Delta I = 600$

(*i*) $\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$

$\Rightarrow \frac{\Delta Y}{600} = \frac{1}{1 - 0.6}$

$\Rightarrow \Delta Y = \frac{600}{0.4} =$ ₹ 1500 crores.

(*ii*) $\Delta S = MPS \times \Delta Y$

$= 0.4 \times 1500 =$ ₹ 600 crores.

Illustration 20. In an economy, $C = 300 + 0.8Y$ and $I =$ ₹ 500. Calculate the following:

(*i*) Equilibrium level of income

(*ii*) Consumption expenditure at equilibrium level of income.

Solution.

(*i*) $Y = C + I$

$\Rightarrow Y = 300 + 0.8Y + 500$

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$\Rightarrow \quad Y - 0.8Y = 800$

$\Rightarrow \quad Y = \frac{800}{0.2} = ₹\ 4000.$

(*ii*) $C = 300 + 0.8 \times 4000 = ₹\ 3500.$

Illustration 21. In an economy, with every increase in income 10 per cent of the rise in income is saved. Suppose a fresh investment of ₹ 120 crores takes place in the economy. Calculate the following:

(*i*) Change in the income

(*ii*) Change in consumption.

Solution.

$MPS = 10\% = 0.1$

$\Delta I = 120$

(*i*) $\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$

$\Rightarrow \quad \frac{\Delta Y}{\Delta I} = \frac{1}{0.1}$

$\Rightarrow \quad \Delta Y = \frac{120}{0.1} = ₹\ 1200$ crore

(*ii*) $\Delta C = MPC \times \Delta Y$

$= 0.9 \times 1200 = ₹\ 1080$ crore

Illustration 22. In an economy, $C = 500 + 0.75Y$ and $I = ₹\ 800$. Calculate the following:

(*i*) Equilibrium level of income

(*ii*) Consumption expenditure at equilibrium level of income.

Solution.

(*i*) $Y = C + I$

$\Rightarrow \quad Y = 500 + 0.75Y + 800$

$\Rightarrow \quad Y - 0.75Y = 1300$

$\Rightarrow \quad Y = \frac{1300}{0.25} = ₹\ 5200$

(*ii*) $C = 500 + 0.75 \times 5200$

$= ₹\ 4400.$

Illustration 23. State whether the following statements are true or false. Give reasons for your answer:

(*a*) When marginal propensity to consume is greater than marginal propensity to save, the value of investment multiplier will be greater than 5.

(*b*) The value of marginal propensity to save can never be negative.

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Solution.

(*a*) False, *MPC* can be greater than *MPS* when *MPC* has value of 0.6, 0.7, 0.8,0.9 and 1. When *MPS* in 0.4, multiplier is less than 5, it is 2.5.

(*b*) True, *APS* can be negative but *MPS* is always positive.

Illustration 24. Giving reasons, state whether the following statements are true or false:

(*a*) When marginal propensity to consume is zero, the value of investment multiplier will also be zero.

(*b*) Value of average propensity to save can never be less than zero.

Solution.

(*a*) False, when *MPC* = 0, investment multiplier is not zero, it is equal to one

$$K = \frac{1}{MPS} = \frac{1}{1.0} = 1$$

When all income is saved national income will increase just once.

(*b*) False, since savings can be negative *APS* can be less than zero

Illustration 25. State whether the following statements are true or false. Give reasons for your answer.

(*a*) When investment multiplier is 1, the value of marginal propensity to consume is zero.

(*b*) The value of average propensity to save can never be greater than one.

Solution.

(*a*) True, when investment multiplier is one. It means national income will increase just once. Hence *MPC* is zero.

(*b*) True, since *APS* + *APC* = 1, Then *APS* can maximum be one and never more than one.

Illustration 26. If National income is ₹ 50 crore and Saving ₹ 5 crore, find out average propensity to consume. When income rises to ₹ 60 crore and saving to ₹ 9 crore, what will be the average propensity to consume and the marginal propensity to save?

(*Delhi 2011*)

Solution.

(*a*) $Y = 50$

$S = 5$

$C = Y - S = 50 - 5 = 45$

$\therefore \quad APC = \frac{C}{Y} = \frac{45}{50} = 0.9$

(*b*) $Y_1 = 60$

$\therefore \quad \Delta Y = 10$

$S_1 = 9$

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$$\therefore \quad \Delta S = 4$$

$$APC = \frac{C}{Y} = \frac{60-9}{60} = \frac{51}{60} = 0.85$$

$$MPS = \frac{\Delta S}{\Delta Y} = \frac{4}{10} = 0.4$$

Illustration 27. Given that national income is ₹ 80 crore and consumption expenditure ₹ 64 crore, find out average propensity to save. When income rises to ₹ 100 crore and consumption expenditure to ₹ 78 crore, what will be the average propensity to consume and the marginal propensity to consume?

Solution.

(*a*) $Y = 80$

$C = 64$

$$APS = \frac{S}{Y} = \frac{80-64}{80} = \frac{16}{80} = 0.2$$

(*b*) $Y_1 = 100$

$\therefore \quad \Delta Y = 20$

$C_1 = 78$

$\therefore \quad \Delta C = 14$

$$\therefore \quad APC = \frac{C}{Y} = \frac{78}{100} = 0.78$$

$$MPC = \frac{\Delta C}{\Delta Y} = \frac{14}{20} = 0.7$$

Illustration 28. In an economy the marginal propensity to save is 0.4. National income in the economy increases by ₹ 200 crore as a result of change in investment. Calculate the change in investment.

Solution.

$\Delta I = ?$

$$K = \frac{1}{MPS} = \frac{1}{0.4} = 2.5$$

$$\therefore \quad \frac{\Delta Y}{\Delta I} = K$$

$$\Delta I = \frac{200}{2.5} = ₹ 80 \text{ crore}$$

Illustration 29. In an economy the marginal propensity to consume is 0.75. Investment expenditure in the economy increases by ₹ 75 crore. Calculate the total increase in national income.

Solution.

$MPC = 0.75$

$\Delta I = 75$

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$$K = \frac{1}{1 - MPC} = \frac{1}{1 - 0.75} = \frac{1}{0.25} = 4$$

$$\therefore \quad \frac{\Delta Y}{\Delta I} = K$$

$$\Delta Y = 4 \times 75 = ₹\ 300 \text{ crore}$$

Illustration 30. An economy is in equilibrium. Its consumption function is C = 300 + 0.8 Y where C is consumption expenditure and Y is income and investment is ₹ 700. Find national income.

Solution.

$$C = 300 + 0.8Y$$
$$I = 700$$
$$Y = C + I$$
$$Y = 300 + 0.8Y + 700$$
$$Y - 0.8Y = 1000$$
$$Y = \frac{1000}{0.2} = ₹\ 5000$$

Illustration 31. Find national income from the following: (*Delhi 2012*)

Autonomous consumption = ₹ 100

Marginal propensity to consume = 0.80

Investment = ₹ 50

Solution.

$$Y = \bar{C} + MPC\,(Y) + I$$
$$Y = 100 + 0.8Y + 50$$
$$.2Y = 150$$
$$Y = ₹\ 750$$

Illustration 32. Find Consumption Expenditure from the following: (*AI 2012*)

National Income = ₹ 5,000

Autonomous Consumption = ₹ 1,000

Marginal propensity to consume = 0.80

Solution.

$$C = \bar{C} + MPC\,(Y)$$
$$C = 1{,}000 + 0.80 \times 5{,}000$$
$$= ₹\ 5{,}000$$

Illustration 33. Find 'investment' from the following: (*Foreign 2012*)

National income = ₹ 800

Autonomous consumption = ₹ 50

Marginal propensity to consume = 0.8

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Solution. $Y = C + I$

$800 = 50 + 0.8 \times 800 + I$

$I = 800 - 690$

$I = ₹\ 110$

Illustration 34. Find 'investment' from the following: (*Delhi 2012*)

National income = ₹ 500

Autonomous consumption = ₹ 100

Marginal propensity to consume = 0.75

Solution. $Y = \overline{C} + MPC\,(Y) + I$

$500 = 100 + 0.75\,(Y) + I$

$I = 500 - 100 - 0.75\,(500)$

$I = ₹\ 25$

Illustration 35. Find consumption expenditure from the following: (*Delhi 2012*)

Autonomous consumption = ₹ 100

Marginal propensity to consume = 0.70

National income = ₹ 1,000

Solution. $C = \overline{C} + MPC\,(Y)$

$= 100 + (0.7 \times 1{,}000)$

$= 100 + 700$

$C = ₹\ 800$

Illustration 36. Find National Income from the following: (*AI 2012*)

Autonomous consumption = ₹ 100

Marginal propensity to consume = 0.60

Investment = ₹ 200

Solution. $Y = C + I$

$Y = [\overline{C} + bY] + I$

$Y = 100 + 0.60Y + 200$

$\Rightarrow Y - 0.60Y = 300$

$$Y = \frac{300}{0.4} = ₹\ 750$$

Illustration 37. Find Investment from the following: (*AI 2012*)

National income = ₹ 600

Autonomous consumption = ₹ 150

Marginal propensity to consume = 0.70

Solution. $Y = C + I$

$Y = \overline{C} + bY + I$

$\Rightarrow \quad 600 = 150 + (0.70 \times 600) + I \quad \Rightarrow \quad I = ₹\ 30$

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Illustration 38. Find consumption expenditure from the following: (*Foreign 2012*)

Autonomous consumption = ₹ 150

Marginal propensity to consume = 0.75

National income = ₹ 1,000

Solution. $C = \bar{C} + bY$

$= 150 + 0.75 \times 1{,}000$

$= ₹\ 900$

Illustration 39. Find National Income from the following: (*Foreign 2012*)

Autonomous consumption = ₹ 200

Marginal propensity to consume = 0.70

Investment = ₹ 700

Solution. $Y = C + I$

$Y = 200 + 0.70Y + 700$

$0.3Y = 900$

$Y = ₹\ 3000$

Illustration 40. In an economy, a 20 per cent increase in investment results in a 100 per cent increase in income. Calculate the marginal propensity to consume. (*Delhi 2012*)

Solution. $K = \frac{\Delta Y}{\Delta I} = \frac{100}{20} = 5$

$K = \frac{1}{1-b}$

$\Rightarrow \quad 5 = \frac{1}{1-b}$

$\Rightarrow \quad 5(1-b) = 1$

$\Rightarrow \quad 5 - 5b = 1$

$\Rightarrow \quad 5b = 4$

$\Rightarrow \quad b = MPC = \frac{4}{5} = 0.8$

Illustration 41. Complete the following table: (*Delhi 2012*)

Income (₹)	*MPC*	Savings (₹)	*APC*
100		40	0.60
200	—	90	—
—	—	125	0.50

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Solution.

Income Y	$MPC = \frac{\Delta C}{\Delta Y}$	Savings S	$APC = \frac{C}{Y}$	$C = Y - S$
100		40	0.60	60
200	$\frac{50}{100} = \mathbf{0.5}$	90	$\frac{110}{200} = \mathbf{0.55}$	110
250	$\frac{15}{50} = \mathbf{0.3}$	125	0.50	125

Illustration 42. In an economy, a 40 per cent increase in investment results in a 40 per cent increase in income. Calculate the marginal propensity to consume. (*Delhi 2012*)

Solution. $\Delta I = 40\%$

$\Delta Y = 40\%$

$$K = \frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad \frac{0.40}{0.40} = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad 1 - MPC = 1 \Rightarrow MPC = 0$$

Illustration 43. Complete the following table: (*Delhi 2012*)

Income (₹)	Savings (₹)	*MPC*	*APC*
100	40		0.6
200	—	0.5	—
250	120	—	—

Solution.

Income (₹)	Saving (₹)	C = Y – S (₹)	MPC = $\frac{\Delta C}{\Delta Y}$	APC = $\frac{C}{Y}$
100	40	60		0.6
200	**90**	110	0.5	$\frac{110}{200} = \mathbf{0.55}$
250	120	130	$\frac{20}{50} = \mathbf{0.4}$	$\frac{130}{250} = \mathbf{0.52}$

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Illustration 44. Complete the following table: (*Delhi 2012*)

Income (₹)	Consumption expenditure (₹)	*APS*	*MPS*
200	120	0.40	
400	220	—	—
—	250	0.50	—

Solution.

Income Y	Consumption expenditure (C)	Saving $S = Y - C$	$APS = \frac{S}{Y}$	$MPS = \frac{\Delta S}{\Delta Y}$
200	120	80	0.40	
400	220	180	$\frac{180}{400} = \mathbf{0.45}$	$\frac{100}{200} = \mathbf{0.5}$
500	250	250	0.50	$\frac{70}{100} = \mathbf{0.7}$

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Illustration 45. Marginal propensity to consume is zero. Calculate the change in income if investment falls by ₹ 1,000 crores. (*AI 2012*)

Solution. $\Delta I = 1000$ crores

$MPC = 0$

$$\therefore K = \frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad \frac{\Delta Y}{1000} = \frac{1}{1-0}$$

$$\Rightarrow \quad \Delta Y = 1000$$

$\therefore$ Income also falls by ₹ 1,000 crores.

Illustration 46. Complete the following table: (*AI 2012*)

Income (₹)	Consumption expenditure (₹)	*APS*	*MPC*
400	240	0.4	
800	440	—	—
—	520	0.48	—

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Solution.

Income	Consumption expenditure (C)	Saving (S)	$APS = \frac{S}{Y}$	$MPC = \frac{\Delta C}{\Delta Y}$
400	240	160	0.4	
800	440	360	$\frac{360}{800} = \mathbf{0.45}$	$\frac{200}{400} = \mathbf{0.5}$
1000	520	480	0.48	$\frac{120}{200} = \mathbf{0.6}$

Illustration 47. In an economy, income increase from ₹ 5,000 crore to ₹ 6,000 crore as a result of 20 percent increase in investment. Calculate the value of investment multiplier. (*AI 2012*)

Solution. $\Delta Y = 1000$ crores

$\Delta I = 20\%$

$\Delta Y = \frac{1000}{5000} \times 100 = 20\%$

$\therefore \quad K = \frac{\Delta Y}{\Delta I} = \frac{20}{20} = 1$

Illustration 48. Calculate investment expenditure from the following data about an economy which is in equilibrium:

National income = 1000

Marginal propensity to save = 0.25

Autonomous consumption expenditure = 200 (*Delhi 2014*)

Solution. Since $MPS = 0.25 \quad \therefore \quad MPC = 1 - 0.25 = 0.75$

$Y = C + I$

$1000 = 200 + 0.75\ Y + I$

$\Rightarrow \quad 1000 = 200 + 0.75 \times 1000 + I$

$\Rightarrow \quad I = 50$

Illustration 49. Calculate autonomous consumption expenditure from the following data about an economy which is in equilibrium. (*Delhi 2014*)

National income = 1200

Marginal propensity to save = 0.20

Investment expenditure = 100

Solution. $Y = C + bY + I$

$\Rightarrow \quad 1200 = C + 0.20\ (1200) + 100$

$\Rightarrow \quad C = 140$

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Important Formulas

$$AD = C + I$$

$$AS = C + S$$

$$APC = \frac{C}{Y}$$

$$APS = \frac{S}{Y}$$

$$MPC = \frac{\Delta C}{\Delta Y}$$

$$MPS = \frac{\Delta S}{\Delta Y}$$

$$K = \frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

$$APC + APS = 1$$

$$MPC + MPS = 1$$

Points to Remember

AD

1. *AD* means total demand for final goods and services in the economy.
2. *AD* means aggregate expenditure.
   $AD = C + I + G + X - M$
3. There are four components of *AD*, namely:
   (*a*) Household consumption expenditure (*C*)
   (*b*) Private investment demand (*I*)
   (*c*) Government demand for goods and services (*G*)
   (*d*) Net export demand ($X - M$)
4. Keynes has taken *AD* as the sum total of only two components — *C* and *I*.
   Thus, $AD = C + I$
   Graphically, *AD* curve is a positively sloping line originating from the *y*-axis.

AS

AS is the money value of total supply of goods and services available for purchase in an economy during a given period.

$AS = C + S$

Consumption Demand and Consumption Function

It is defined as that part of disposable income which consumer spends on purchase of goods and services. Symbolically, $C = f(Y_d)$. Keynes maintained that as income rises, propensity to consume also rises but in a lesser proportion and a portion of income is saved.

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Measurement of Propensity to Consume

(*i*) *APC*. It is the ratio of aggregate consumption expenditure to national income, *i.e.*, $APC = \frac{C}{Y}$

As Y rises, APC declines continuously.

(*ii*) *MPC*. It is the change in consumption spending due to change in aggregate income, *i.e.*, $MPC = \frac{\Delta C}{\Delta Y}$.

The value of MPC lies between zero and one, *i.e.*, $0 < MPC < 1$.

$APC > MPC$ will always be true.

Saving Function or Propensity to Save

It is defined as that part of disposable income which is saved and not spent on consumption of goods and services. Symbolically,

$S = f(Y_d)$. Keynes maintained that as income rises savings also rises.

Measurement of Propensity to Save

(*i*) *APS*. It is the ratio of aggregate saving to aggregate income, *i.e.*, $APS = \frac{S}{Y}$.

(*ii*) *MPS*. It is the change in saving due to change in national income, *i.e.*, $MPS = \frac{\Delta S}{\Delta Y}$.

Relationship between:

MPC and *MPS*	*APC* and *APS*
$MPC + MPS = 1$ will always be true because MPC is always positive and less than one. Then, MPS must also be positive and less than one.	$APC + APS = 1$ will always be true because income can be either consumed or saved.

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Ex-ante Saving and Investment.

The savings which are planned or desired or intended to be made by all the households in the economy at different levels of income during a period of time are called ex-ante savings or planned savings. These are planned at the beginning of the period.

The investment which is planned or desired or intended to be made by all the producing units in the economy during a period of time is called ex-ante investment. It is also called planned investment. It is planned at the beginning of the period.

Ex-ante savings and investment may or may not be equal. Equilibrium in the economy takes place only when these two are equal.

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Ex-post Saving and Investment

The savings which have been actually saved by all households in the economy at different levels of income during a period of time are called ex-post savings. These are also called actual savings. It is measured at the end of the period.

The investment which has been actually invested by all the producing units in the economy during a period of time then it is called ex-post investment. It is also called actual investment. It is measured at the end of the period.

Actual savings and actual investment are always equal in the economy.

Determination of Equilibrium Level of Income, Output and Employment

1. Equilibrium Level of Income, Output and Employment is determined where:

   $AD = AS$ ... Approach 1

   or $C + I = C + S$

   or $I = S$ ... Approach 2

2. Two situations when AD is not equal to AS:

$AS > AD$	$AD > AS$
It implies that there is an excess supply	It implies that there is an excess demand
↓	↓
Presence of unsold stock	Rise in profits
↓	↓
Cut down production	Rise in production
↓	↓
Use lesser factors	Rise in income or national income
↓	
Fall in income or national income	

3. **Relationship between Output, Income and Employment.** All the three variables are interlinked. They are determined by the *level of AD* and the relationship among them is direct, *i.e.,* Rise in $AD \Rightarrow$ Rise in employment $\Rightarrow$ Rise in output $\Rightarrow$ Rise in income.
4. ***S* = *I* Approach**

   Saving (*S*). It is the excess of income over consumption. It depends upon the level of income.
   Investment (*I*). It is the total demand for capital goods by private entrepreneurs in an economy.
5. **Determination of Equilibrium.** Economy is in a state of equilibrium. If and only if planned S = planned I. It means that an economy invests what it has saved. The equilibrium point gives the equilibrium level of national income.

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6. Two situations where saving is not equal to investment.

$S > I$	$I > S$
It implies there is an excess savings or Realised savings > Planned Investment	It implies that there is an excess investment or Planned investment > Realised savings
↓ Unplanned investment exists	↓ Unplanned disinvestment exists
↓ Firms reduce investment	↓ Firms raise investment
↓ Lay-off workers	↓ Employs more workers
↓ Fall in production	↓ Rise in production
↓ Fall in income or national income	↓ Rise in income or national income

Full Employment and Underemployment Equilibrium

Keynesian Theory

1. The theory is assumed to be applicable only under short run and perfect competition conditions. The theory states that:

(*a*) An economy can be in equilibrium at less than full employment level.

(*b*) Demand creates its own supply.

(*c*) *AD* determines the level of output, income and employment.

(*d*) Government's intervention can help in achieving $AD = AS$.

2. Assumptions of the theory are:

(*a*) Rigid wages and prices.

(*b*) Constant marginal product of labour.

3. Underemployment Equilibrium

In Keynesian theory equilibrium between horizontal *AS* curve and downward sloping *AD* curve occurs at less than full employment level.

Multiplier

1. Keynes investment multiplier states that to a change in aggregate investment, national income changes in a multiple amount. Multiplier is symbolically denoted as *K* and measured as $K = \frac{\Delta Y}{\Delta I}$.

2. $K = \frac{1}{1 - MPC}$ ... since $\frac{\Delta C}{\Delta Y} = MPC$

or $K = \frac{1}{MPS}$ ... since $MPC + MPS = 1$

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3. The points of relationship are:

(*a*) *MPC* and multiplier are directly related. If *MPC* is more, multiplier is more and vice versa. *MPC* shows change in consumption as a result of change in income.

(*b*) If *MPC* = 1 (*i.e.*, all income is spent on consumption expenditure and *MPS* = 0), then $K = \frac{1}{0} = \infty$ implying national income will go on increasing in successive rounds.

(*c*) *MPS* and multiplier are inversely related. If *MPS* is more, multiplier is less and vice versa.

(*d*) If *MPS* = 1, (*i.e.*, all income is saved, and *MPC* = 0), then $K = \frac{1}{1 - MPC} = \frac{1}{1 - 0} = 1$. It implies that national income will increase just once.

Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. Give meaning of full employment? (*Delhi 2008, 09*)

2. What is meant by *AS*? (*AI 2008, 09*; *Foreign 2008; Delhi 2009*)

3. Give meaning of involuntary unemployment? (*Delhi 2008*)

4. Why can the value of *MPC* be not greater than one?

5. What is aggregate demand? (*Foreign 2008*; *Delhi, AI 2009*)

6. If increase in investment is ₹ 125 crore, national income of a country increases by ₹ 500 crore, calculate marginal propensity to save. [*Ans.* 0.25]

7. Given *MPC* = 0.9 and increase in investment equals to ₹ 100 crore, calculate the value of multiplier and total increase in income. [*Ans.* 10]

8. An increase in investment in a country leads to increase in national income by ₹ 200 crore. If marginal propensity to consume is 0.75, what is the increase in investment? [*Ans.* ₹ 50 crores] (*AI 2007*)

9. In an economy investment increases by ₹ 120 crore. The value of investment multiplier is 4. Calculate the marginal propensity to consume. [*Ans.* 0.75] (*Delhi, 2006*)

10. In an economy investment increases by ₹ 600 crore. If marginal propensity to consume is 0.7, what is the increase in total national income? [*Ans.* ₹ 2000 crores] (*AI 2006*)

11. A ₹ 200 crore increase in investment leads to a rise in national income by ₹ 1,000 crore. Find out marginal propensity to consume. [*Ans.* 0.8] (*Delhi 2007*)

12. In an economy, investment increases by ₹ 10 crore and as a result income increases by ₹ 50 crore, what is the value of multiplier? [*Ans.* 5]

13. What is propensity to consumers? (*Delhi 2008, 2009; Foreign 2008; AI 2009*)

14. Give the meaning of marginal propensity to save. (*Delhi 2008; AI 2009*)

15. What is underemployment equilibrium? (*Delhi, Foreign 2008*)

16. Define average propensity to consume. (*AI 2008, 09; Delhi 2012*)

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17. If the value of *MPS* is 0.3, what is the value of *MPC*? [*Ans.* 0.7] (*AI 2008*)
18. Define average propensity to save. (*AI 2008*)
19. What is the minimum value of investment multiplier? (*AI 2008; Delhi 2009*)
20. Define involuntary unemployment. (*Delhi, AI, Sample Paper 2009*)
21. If investment multiplier is 1, what will be the value of marginal propersity to counsume? [*Ans.* 0] (*Delhi 2009*)
22. Give the meaning of autonomous consumption. (*Delhi 2009*)
23. What is the relation between *MPS* and multiplier? (*Foreign 2009*)
24. Can the value of *APS* be negative? If yes, when? (*Foreign 2009*)
25. What is the relationship between *MPS* and *MPC*? (*Sample Paper 2009*)
26. Define propensity to save. (*Delhi 2009*)
27. What is ex-ante aggregate demand? (*AI 2010*)
28. Give the meaning of autonomous consumption. (*Foreign 2010*)
29. What is meant by ex-ante investment? (*Foreign 2010*)
30. Give the meaning of ex-ante savings. (*Delhi 2010*)
31. What can be the minimum value of investment multiplier? (*Delhi 2012*)
32. How is the value of marginal propensity to save calculated? (*Delhi 2012*)
33. Give the meaning of aggregate demand. (*Delhi 2012*)
34. If the value of marginal propensity to save is 0.4, what will be the value of investment multiplier? [*Ans.* 2.5] (*AI 2012*)
35. What is full employment? (*AI 2014*)
36. What is involuntary unemployment? (*Delhi 2014*)
37. Define marginal propensity to consume. (*Delhi 2014*)
38. Define aggregate supply. (*Delhi 2014*)

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Multiple Choice Questions

1. If the value of *MPS* is 0.25, what is the value of multiplier?
(*a*) 4 (*b*) 2 (*c*) 5 (*d*) 4.5

2. If the value of *MPS* is 0.2, what is the value of multiplier?
(*a*) 5 (*b*) 2 (*c*) 7.5 (*d*) 8.5

3. If the value of *MPS* is 0.1, what is the value of multiplier?
(*a*) 10 (*b*) 5 (*c*) 2 (*d*) ∞

4. If value of *MPC* is 0.8, find out the multiplier.
(*a*) 5 (*b*) 10 (*c*) 15 (*d*) 20

5. If the value of *MPC* is 0.9, find out value of multiplier.
(*a*) 5 (*b*) 10 (*c*) 15 (*d*) 20

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6. If *MPS* = 1, calculate the value of multiplier.
(*a*) 1 (*b*) 4 (*c*) 2 (*d*) 3

7. What is the value of *MPC* when *MPS* = 0?
(*a*) 1 (*b*) 0 (*c*) ∞ (*d*) 4

8. If disposable income is ₹ 100 and consumption expenditure is ₹ 80, find out *APS*.
(*a*) 20% (*b*) 30% (*c*) 40% (*d*) 50%

9. If disposable income is ₹ 1,000 and consumption expenditure is ₹ 700, find out *APS*.
(*a*) 10% (*b*) 5% (*c*) 30% (*d*) 40%

10. If disposable income is ₹ 500 and saving ₹ 100, find out *APC*.
(*a*) 80% (*b*) 20% (*c*) 10% (*d*) 5%

11. If disposable income is ₹ 1,000 and saving ₹ 250, find out *APC*.
(*a*) 75% (*b*) 20% (*c*) 25% (*d*) 35%

12. If *MPS* is one, how much is *MPC*?
(*a*) 0 (*b*) 1 (*c*) 5 (*d*) 3

13. If *APC* = 0.75, how much is *APS*?
(*a*) 25% (*b*) 50% (*c*) 10% (*d*) 20%

14. In an economy marginal propensity to consume is 0.75. If investment expenditure is increased by ₹ 500 crore, calculate the total increase in income and consumption expenditure.
(*a*) 500 cr (*b*) 100 cr (*c*) 1000 cr (*d*) 1500 cr

15. In an economy investment expenditure is increased by ₹ 400 crore and marginal propensity to consume is 0.8. Calculate the total increase in income and savings.
(*a*) 400 cr (*b*) 100 cr (*c*) 20 cr (*d*) 40 cr

16. In an economy, the marginal propensity to save is 0.25. Investment is increased by ₹ 200 crore. Calculate the total increase in income and consumption expenditure.
(*a*) 600 cr (*b*) 400 cr (*c*) 100 cr (*d*) 200 cr

17. If marginal propensity to save is 0.1 and increase in national income is ₹ 500 crore, calculate increase in investment.
(*a*) 50 cr (*b*) 40 cr (*c*) 10 cr (*d*) 2 cr

18. By increase in investment of ₹ 100 crore, national income of a country increases by ₹ 250 crore. Find out the marginal propensity to consume.
(*a*) 0.2 (*b*) 0.4 (*c*) 0.6 (*d*) 0.7

Short Answer Type Questions **(*3/4 Marks*)**

1. Distinguish between marginal propensity to consume and marginal propensity to save. What is the relationship between the two?

2. Give the meaning of marginal propensity to save and average propensity to save. Can the value of average propensity to save be negative? If yes, when? (*AI 2006*)

3. Distinguish between average propensity to consume and marginal propensity to consume. Can the value of average propensity to consume be greater than 1? Give reasons for your answer. (*Foreign 2006*)

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4. Give meanings of:
(*i*) Involuntary unemployment
(*ii*) Full employment
(*iii*) Underemployment equilibrium. (*Delhi 2007*)

5. Suppose that consumption equals : $C = 40 + .75Y$, investment equals : $I = ₹60$ and $Y = C + I$. Find:
(*i*) The equilibrium level of income,
(*ii*) The level of consumption at equilibrium and
(*iii*) The level of saving at equilibrium. [*Ans.* (*i*) ₹ 400 (*ii*) ₹ 340 (*iii*) ₹ 60]

6. Explain the meaning of equilibrium level of income. Can there be unemployment in the economy at equilibrium level of income? Explain. (*Delhi 2008*)

7. In a two-sector economy, the consumption and investment functions are as follows:

$$Y = C + I\ ;\ C = 50 + .8Y;\ I = 50$$

Find (*i*) the equilibrium level of income; (*ii*) the level of consumption at equilibrium and (*iii*) the level of saving at equilibrium. [*Ans.* (*i*) ₹ 500 (*ii*) ₹ 450 (*iii*) ₹ 50]

8. Show with the help of saving and investment curves, the determination of equilibrium level of income.

9. Given the equilibrium condition :
$Y = C + I$, $C = C_0 + bY$, $I = I_0$ Determine
(*i*) The equilibrium level of income,
(*ii*) The change in income that results from an autonomous change in I_0, and
(*iii*) The value of multiplier.

10. What is meant by 'investment multiplier'? Explain the relationship between marginal propensity to consume and investment multiplier. (*AI 2006*)

11. What is meant by investment multiplier? Explain the relationship between marginal propensity to save and investment multiplier. (*Delhi 2007*)

12. Explain the meaning of investment multiplier. What can be its minimum value and why? (*Delhi 2006; AI 2007*)

13. Derive the multiplier when *MPC* is (*i*) 0.90 (*ii*) 0.80 and (*iii*) 0.75. [*Ans.* (*i*) 10 (*ii*) 5 (*iii*) 4]

14. Explain the working of investment multiplier with the help of an example.

15. As a result of increase in investment national income rises by ₹ 600 crores. If marginal propensity to consume is 0.75, calculate the increase in investment.
[*Ans.* ₹ 150 crores] (*Delhi 2008*)

16. If *MPC* is 0.9, what is the value of multiplier? How much investment is needed to increase national income by ₹ 5000 crores? Calculate. [*Ans.* (*i*) 10 (*ii*) ₹ 500 crores] (*Delhi 2008*)

17. In an economy an increase in investment leads to increase in national income which is three times more than the increase in investment. Calculate *MPC*. [*Ans.* 0.67] (*AI 2008*)

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18. If *MPS* is 0.2, how much new investment is required to make the national income rise by ₹ 600 crores? Calculate. [*Ans.* ₹ 120 crores] (*AI 2008*)

19. Given *MPS* equal to 0.25, what will be the increase in national income if investment increases by ₹ 125 crores. Calculate. [*Ans.* ₹ 500 crores] (*AI 2008*)

20. It is planned to increase National Income by ₹ 1000 crores. How much increase in investment is required to achieve this goal? Assume that *MPC* is 0.6. Calculate.

[*Ans.* ₹ 400 crores] (*Foreign 2008*)

21. In an economy, aggregate demand is less than aggregate supply. Explain the changes that will take place in the economy. (*AI 2008*)

22. Complete the following table: (*Delhi 2009*)

Income (₹)	Saving (₹)	*MPC*	*APS*
0	– 12	—	—
20	– 6	—	—
40	0	—	—
60	6	—	—

23. Complete the following table: (*Delhi 2009*)

Income (₹)	Saving (₹)	*MPC*	*APC*
0	– 6	—	—
20	3	—	—
40	0	—	—
60	3	—	—

24. Complete the following table: (*Delhi 2009*)

Income (₹)	Saving (₹)	*MPS*	*APS*
0	–10	—	—
50	20	—	—
100	50	—	—
150	80	—	—

25. Complete the following table: (*AI 2009*)

Income	*MPS*	Saving	*APS*
0	—	– 90	—
100	0.6	—	—
200	0.6	—	—
300	0.6	—	—

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26. Complete the following table: (*AI 2009*)

Income (₹)	Saving (₹)	*MPS*	*APC*
0	−15	—	—
50	20	—	—
100	55	—	—
150	90	—	—

27. Complete the following table: (*AI 2009*)

Income (₹)	*MPS*	Saving (₹)	*APC*
0	—	−10	—
100	0.75	—	
200	0.75	—	—
300	0.75	—	—

28. Complete the following table: (*Foreign 2009*)

Income (₹)	Consumption (₹)	*MPS*	*APS*
0	12	—	—
20	26	—	—
40	40	—	—
60	54	—	—

29. Complete the following table: (*Foreign 2009*)

Income (₹)	Saving (₹)	*APC*	*MPC*
0	− 30	—	—
50	− 15	—	—
100	0	—	—
150	15	—	—

30. Complete the following table: (*Sample Paper 2009*)

Income (₹)	Saving (₹)	*MPC*	*APC*
0	− 20	—	—
50	− 10	—	—
100	0	—	—
150	30	—	—
200	60	—	—

31. There is an increase in investment by ₹ 100 crores in an economy. *MPC* is 1. What can you say about total increase in income? (*Delhi 2009*)

32. Investment in an economy increases by ₹ 400 crores. *MPC* is zero. Calculate the change in national income. [*Ans.* ₹ 400 crores] (*AI 2009*)

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33. If National income is ₹ 50 crore and Saving ₹ 5 crore, find out average propensity to consume. When income rises to ₹ 60 crore and saving to ₹ 9 crore, what will be the average propensity to consume and the marginal propensity to save?
[*Ans.* 0.90, 0.85, 0.40] (*Delhi 2011*)

34. Given that national income is ₹ 80 crore and consumption expenditure ₹ 64 crore, find out average propensity to save. When income rises to ₹ 100 crore and consumption expenditure to ₹ 78 crore, what will be the average propensity to consume and the marginal propensity to consume? [*Ans.* 0.20, 0.78, 0.70] (*Delhi 2011*)

35. Explain the relationship between investment multiplier and marginal propensity to consume. (*Delhi 2011*)

36. In an economy the marginal propensity to consume is 0.75. Investment expenditure in the economy increases by ₹ 75 crore. Calculate the total increase in national income.
[*Ans.* ₹ 300 crores] (*AI 2011*)

37. Explain the distinction between voluntary and involuntary unemployment. (*AI 2011*)

38. Outline the steps taken in deriving saving curve from the consumption curve. Use diagram. (*Delhi 2012*)

39. Outline the steps taken in deriving consumption curve from the saving curve. Use diagram. (*AI 2012*)

40. Draw consumption curve and saving curve in a single diagram and mark the 'break-even point'. (*Foreign 2012*)

41. Find national income from the following:
Autonomous consumption = ₹ 100
Marginal propensity to consume = 0.80
Investment = ₹ 50 [*Ans.* ₹ 750] (*Delhi 2012*)

42. In an economy, a 20 percent increase in investment results in a 100 percent increase in income. Calculate the marginal propensity to consume. [*Ans.* 0.8] (*Delhi 2012*)

43. Complete the following table: (*Delhi 2012*)

Income (₹)	*MPC*	Savings (₹)	*APC*
100		40	0.60
200	—	90	—
—	—	125	0.50

44. In an economy, a 40 percent increase in investment results in a 40 percent increase in income. Calculate the marginal propensity to consume. [*Ans.* 0] (*Delhi 2012*)

45. Complete the following table: (*Delhi 2012*)

Income (₹)	Savings (₹)	*MPC*	*APC*
100	40		0.6
200	—	0.5	—
250	120	—	—

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46. Complete the following table: (*Delhi 2012*)

Income (₹)	Consumption expenditure (₹)	*APS*	*MPS*
200	120	0.40	
400	220	—	—
—	250	0.50	—

47. What changes will take place in the economy when aggregate demand is less than aggregate supply? Explain. (*AI 2012*)

48. Complete the following table: (*AI 2012*)

Income (₹)	*MPS*	*APS*	Consumption expenditure (₹)
200		0.4	120
400	—	—	220
—	—	0.48	260

49. Complete the following table: (*AI 2012*)

Income (₹)	Consumption expenditure (₹)	*APS*	*MPS*
400	240	0.4	
800	440	—	—
—	520	0.48	—

50. In an economy income increases from ₹ 5,000 crore to ₹ 6,000 crore as a result of 20 percent increase in investment. Calculate the value of investment multiplier. [*Ans.* 1] (*AI 2012*)

51. Complete the following table: (*AI 2012*)

Income (₹)	*APS*	*MPS*	Consumption expenditure (₹)
1000	0.50		500
2000	0.55	—	—
2500	0.60	—	—

52. Calculate Marginal Propensity to Consume from the following data about an economy which is in equilibrium:

National income	= 2000
Autonomous consumption expenditure	= 200
Investment expenditure	= 100

(*AI 2014*)

53. Calculate investment expenditure from the following data about an economy which is in equilibrium: (*AI 2014*)

National income	= 1000
Marginal propensity to save	= 0.20
Autonomous consumption expenditure	= 100

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54. Calculate 'Autonomous Consumption Expenditure' from the following data about an economy which is in equilibrium: (*Foreign 2014*)

National income	= 900
Marginal propensity to save	= 0.10
Investment expenditure	= 80

55. Calculate Autonomous Consumption Expenditure from the following data about an economy which is in equilibrium: (*AI 2014*)

National income	= 500
Marginal propensity to save	= 0.30
Investment expenditure	= 100

Long Answer Type Questions **(*6 Marks*)**

1. How is the 'saving = investment' approach of income determination derived from the aggregate demand and aggregate supply approach? Explain the 'saving = investment' approach. Use diagram. (*AI 2006*; *2008*)

2. Explain the working of investment multiplier with the help of a numerical example.

3. Why must aggregate demand be equal to aggregate supply at the equilibrium level of income and output? Explain with the help of a diagram. (*AI 2006*)

4. Why should planned savings and planned investment be equal at equilibrium level of income? Explain with the help of a diagram. (*Foreign 2006*)

5. Explain consumption function with the help of a schedule and diagram. (*AI 2008*)

6. Explain saving function with the help of a schedule and diagram. (*AI 2008*)

7. In an economy, $C = 500 + 0.9Y$ and $I = 1000$ (where, C = consumption, Y = income, I = investment). Calculate the following:

(*i*) Equilibrium level of income [*Ans.* ₹ 15000]

(*ii*) Consumption expenditure at equilibrium level of income. [*Ans.* ₹ 14000] (*Delhi 2008*)

8. In an economy, every time income rises, 75 per cent of the rise in income is spent on consumption. Now suppose in the same economy investment rises by ₹ 750 crores. Calculate the following:

(*i*) Change in income [*Ans.* ₹ 3000 crores]

(*ii*) Change in saving. [*Ans.* ₹ 750 crores](*Delhi 2008*)

9. In an economy, $C = 1000 + 0.5Y$ and $I = 2000$. Calculate the following:

(*i*) Equilibrium level of income [*Ans.* ₹ 6000 crores]

(*ii*) Savings at equilibrium level of income. [*Ans.* ₹ 2000 crores] (*Delhi 2008*)

10. In an economy, every time income rises, 60 per cent of rise in income is spent on consumption. Now suppose in the same economy investment rises by ₹ 600 crores. Calculate the following:

(*i*) Change in income [*Ans.* ₹ 1500 crores]

(*ii*) Change in saving. [*Ans.* ₹ 600 crores] (*Delhi 2008*)

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11. In an economy $S = -50 + 0.5\ Y$ is the saving function (where S = saving and Y = national income) and investment expenditure is ₹ 7000. Calculate:

(*i*) Equilibrium level of national income. [*Ans.* ₹ 14100]

(*ii*) Consumption expenditure at equilibrium level of national income.

[*Ans.* ₹ 7100] (*AI 2009*)

12. From the following information about an economy, calculate:

(*i*) Its equilibrium level of national income, and (*ii*) savings at equilibrium level of national income.

Consumption function: $C = 200 + 0.9\ Y$,

investment expenditure: $I = 3000$. [*Ans.* (*i*) ₹ 32000 (*ii*) ₹ 3000] (*AI 2009*)

13. $C = 100 + 0.75\ Y$ is a consumption function and investment expenditure is ₹ 800. On the basis of this information calculate:

(*i*) Equilibrium level of national income. [*Ans.* ₹ 3600]

(*ii*) Savings at equilibrium level of national income. [*Ans.* ₹ 800] (*Foreign 2009*)

14. In an economy, aggregate demand is less than aggregate supply. Is the economy in equilibrium? If not, explain the changes that will bring the economy in equilibrium. (*Foreign 2009*)

15. Given below is the consumption function in an economy:

$C = 100 + 0.5\ Y$

With the help of a numerical example show that in this economy as income increases *APC* will decrease. (*Sample Paper 2009*)

16. The saving function of an economy is $S = -200 + 0.25\ Y$. The economy is in equilibrium when income is equal to ₹ 2,000. Calculate:

(*i*) Investment expenditure at equilibrium level of income. [*Ans.* 300]

(*ii*) Autonomous consumption. [*Ans.* 200]

(*iii*) Investment multiplier. [*Ans.* 4] (*Sample Paper 2009*)

17. Draw a straight line consumption curve. From it derive a savings curve explaining the process. Show on this diagram:

(*i*) the level of income at which *APC* is equal to one.

(*ii*) a level of income at which *APS* is negative. (*Sample Paper 2009*)

18. In an economy 75 per cent of the increase in income is spent on consumption. Investment is increased by ₹ 1,000 crore. Calculate:

(*i*) total increase in income

(*ii*) total increase in consumption expenditure.

[Ans. ΔY = ₹ 4000 crores ΔC = ₹ 3400 crores](*Delhi 2010*)

19. In an economy the equilibrium level of income is ₹ 12,000 crore. The ratio of marginal propensity to consume and marginal propensity to save is 3 : 1. Calculate the additional investment needed to reach a new equilibrium level of income of ₹ 20,000 crore.

[*Ans.* ₹ 2000 crores] (*AI 2010*)

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20. Complete the following table : (*Delhi 2013*)

Income ₹	Consumption expenditure ₹	Marginal propensity to save	Average propensity to save
0	80		
100	140	0.4	.....
200	.....	.....	0
.....	240	.....	0.20
.....	260	0.8	0.35

21. In an economy, S= −100 + 0.6 Y is the saving function, where S is Saving and Y is National Income. If investment expenditure is 1100, calculate :

(*i*) Equilibrium level of National Income

(*ii*) Consumption expenditure at equilibrium level of National Income.

[Ans. (*i*) 2000, (*ii*) 900] (*Delhi 2013*)

22. Complete the following table : (*Delhi 2013*)

Income (₹)	Savings (₹)	Average propensity to consume	Marginal propensity to consume
0	− 40		
50	− 20	.....	.....
100	0	.....	0.6
150	30	0.8	.....
200	50	.....	.....

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23. C = 50 + 0.5 Y is the consumption function where C is consumption expenditure and Y is National Income and investment expenditure is 2000 in an economy. Calculate:

(*i*) Equilibrium level of (national) income.

(*ii*) Consumption expenditure at equilibrium level of (national) income.

[Ans. (*i*) 4100, (*ii*) 2100] (*Delhi 2013*)

24. Complete the following table : (*Delhi 2013*)

Consumption Expenditure (₹)	Savings (₹)	Income (₹)	Marginal Propensity to save
100	50	150	
175	75	.....	.....
250	100	.....	.....
325	125	.....	.....

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25. From the data given below about an economy, calculate (a) investment expenditure and (b) consumption expenditure.

(*i*) Equilibrium level of income 5000

(*ii*) Autonomous Consumption 500

(*iii*) Marginal propensity to consume 0.4

[Ans (*a*) 2500 (*b*) 2500] (*AI 2013*)

26. Explain the meaning of under-employment equilibrium. Explain two measures by which full-employment equilibrium can be reached. (*AI 2013*)

27. In an economy C = 200 + 0.75 Y is the consumption function where C is consumption expenditure and Y is National income. Investment expenditure is 4000. Calculate equilibrium level of income and consumption expenditure. [Ans. (*i*) 16800, (*ii*) 12800] (*AI 2013*)

28. From the following data about an economy, calculate (a) equilibrium level of national income and (b) total consumption expenditure at equilibrium level of national income.

(*i*) C = 200 + 0.5 Y is the consumption function where C is consumption expenditure and Y is national income.

(*ii*) Investment expenditure is 1500. [Ans. (*i*) 3400, (*ii*) 1900] (*AI 2013*)

29. Explain all the changes that will take place in an economy when aggregate demand is not equal to aggregate supply. (*AI 2013*)

30. Explain all the changes that take place in an economy when aggregate demand and aggregate supply are not equal. (*Foreign 2013*)

or

Explain the working of investment multiplier with the help of a numerical example. (*Foreign 2013*)

31. In an economy, the consumption function is C=400 + 0.75 Y, where C is consumption expenditure and Y is national income and investment expenditure is 2000. Calculate the equilibrium level of national income and consumption expenditure.

[Ans. (*i*) 9600, (*ii*) 7600] (*Foreign 2013*)

32. Explain national income equilibrium through aggregate demand and aggregate supply. Use diagram. Also explain the changes that take place in an economy when the economy is not in equilibrium. (*Delhi 2014*)

or

Outline the steps required to be taken in deriving saving curve from the given consumption curve. Use diagram.

33. When is an economy in equilibrium? Explain with the help of Saving and Investment functions. Also explain the changes that take place in an economy when the economy is not in equilibrium. Use diagram. (*AI 2014*)

or

Outline the steps required to be taken in deriving the Consumption Curve from the given Saving Curve. Use diagram.

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Answers

Multiple Choice Questions

1. (*a*) **2.** (*a*) **3.** (*a*) **4.** (*a*) **5.** (*b*) **6.** (*a*) **7.** (*a*) **8.** (*a*)
9. (*c*) **10.** (*a*) **11.** (*a*) **12.** (*a*) **13.** (*a*) **14.** (*d*) **15.** (*a*) **16.** (*a*)
17. (*a*) **18.** (*c*)

❑❑

Annexure: Paradox of Thrift

If all the people of the economy increase the proportion of income they save. (*i.e.* if the *MPS* of the economy increases) the total value of savings in the economy will not increase–it will either decline or remain unchanged. This result is known as the **Paradox of Thrift** –which states that as people become more thrifty they end up saving less or same as before.

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7 Problems of Excess and Deficient Demand and Policy Measures to Correct Them

Chapter Scheme

7.1 Excess Demand
- 7.1.1 Meaning of Excess Demand
- 7.1.2 Inflationary Gap and its Measurement
- 7.1.3 Effects of Excess Demand

7.2 Deficient Demand
- 7.2.1 Meaning of Deficient Demand
- 7.2.2 Deflationary Gap and its Measurement
- 7.2.3 Effects of Deficient Demand

7.3 Difference Between Excess Demand and Deficient Demand

7.4 Types of Policy Measures—Fiscal Policy (or Change in Government Spending) and Monetary Policy (or Change in Availability of Credit)

7.5 Measures to Correct Excess Demand
- 7.5.1 Monetary Measures
- 7.5.2 Fiscal Measures

7.6 Measures to Correct Deficient Demand
- 7.6.1 Monetary Measures
- 7.6.2 Fiscal Measures

7.7 Summary of Measures to Correct Excess and Deficient Demand

- Points to Remember
- Test Your Knowledge
- Answers to MCQs

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7.1 EXCESS DEMAND

7.1.1 Meaning of Excess Demand

When in an economy, aggregate demand is for a level of output that is more than 'full employment level of output', the demand is called an excess demand. Alternatively, *when aggregate demand exceeds 'aggregate supply at full employment level', the demand is said to be excess demand* and the gap is called **inflationary gap.** The gap is called inflationary because it **causes inflation** (continuous rise in prices) in an economy.

7.1.2 Inflationary Gap and its Measurement

Inflationary gap (or excess demand situation) is measured in Fig. 7.1.

The *x*-axis measures the level of output and income. The *y*-axis measures consumption demand, investment demand, and their sum—the aggregate demand. *OY* is the full employment level of output and income. $(C + I)$ *AD* and AD_1 are two parallel aggregate demand curves, differing only by the amount of additional investment expenditure (ΔI).

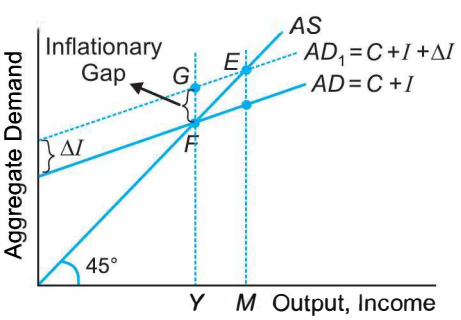


Fig. 7.1 Excess Demand

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The economy will be in a full employment equilibrium at point *F* on the aggregate demand curve *C* + *I* and the economy will produce full employment level of output *OY*.

Until point *Y* increases in nominal income and output corresponds to increase in real income and output (since prices are constant). Beyond point *Y* increase in nominal income and output do not corresponds to any change in real income and output. **This is because real income and output cannot increase beyond the full employment level, as all resources are already fully employed. The increases in nominal income and output are merely due to increase in the price level.**

Suppose that the aggregate demand for a level of output is *GY*. It is greater than the full employment level of output (*OY* or *FY*). This level of aggregate demand corresponds to point *G* on the aggregate demand curve AD_1. This is a **situation of excess demand.** The resulting inflationary gap, created due to the excess demand is equal to *FG*.

The inflationary gap is the amount by which the actual aggregate demand exceeds the level of aggregate demand required to establish the full employment equilibrium. The inflationary gap is a measure of the amount of the excess aggregate demand.

Illustration. How does inflationary gap cause inflation?

Solution. The inflationary gap is so called because it sets in motion forces that will cause inflation or a rise in the price level. At point *G*, *AD* curve lies above the 45° line. As a result, the aggregate demand *GY* is greater than the level of output *OY*. The effect of this will be to create demand pull inflation (an aggregate demand induced rise in the price level). The rise in price level, given the constant real output, will cause an increase in the nominal output until a new equilibrium is reached at point *E*. This is an equilibrium because the aggregate demand *ME* is equal to the output *OM* (since point *E* lies on the 45° line).

It will be noted that the real output and real income is the same at the new equilibrium *E*. Correspondingly, the equilibrium level of employment is also the same. All that has happened is that nominal output and income have increased due to an increase in the price level. Thus, the excess demand caused an inflationay gap. which caused inflation and therefore, the price level rises In other words, the economy remains at a **full employment equilibrium, although at a higher price level.**

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7.1.3 Effects of Excess Demand

The effects of excess demand or inflationary gap are as follows:

1. It causes a continuous and persistent rise in price.
2. The producers get abnormal profit margin.
3. The consumers are losers as their purchasing power goes down with rise in prices.
4. It results in a *wage-price spiral, i.e.,* rise in prices implies that real wages will fall. So, the union will demand for higher wages. It will increase the cost of production and it will again lead to rise in prices.
5. It will lead to increase in employment (if there is any unemployment in the economy). But generally there is no change in unemployment because the system is in full employment.

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6. If there is full employment in the economy, production cannot be increased. But if the resources are not fully employed, then they will be fully employed and production will increase.
7. It leads to prosperity or boom conditions in the trade cycle of an economy.

7.2 DEFICIENT DEMAND

7.2.1 Meaning of Deficient Demand

If aggregate demand is for a level of output less than the full employment level, then a situation of deficient demand exists. Deficient demand give rise to a **'deflationary gap'**, which causes the economy's income, output and employment to decline, thus pushing the economy into an under employment equilibrium.

7.2.2 Deflationary Gap and its Measurement

Deflationary gap or deficient demand is measured in Fig. 7.2.

The *y*-axis measures consumption demand, investment demand and their sum is the aggregate demand. The *x*-axis measures the level of output and income. *OY* is the full employment level of output and income. *AD* and AD_1 are two parallel aggregate demand curves, differing only by the amount of investment expenditure.

For the economy to be at a full employment equilibrium, the aggregate demand should be for a level of output equal to the full employment level of output *OY*. In other words, aggregate demand should be equal to *FY*. The economy will then be in a full employment equilibrium, corresponding to the point *F* on the aggregate demand curve *AD* and the economy will produce full employment level of output *OY*.

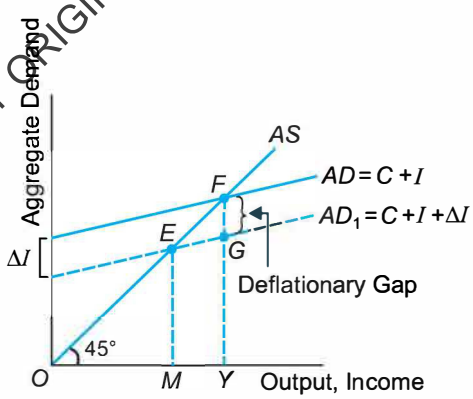


Fig. 7.2 Deficient Demand

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Suppose the aggregate demand is for a level of output *GY* is less than *FY*. Then aggregate demand is for a level of output which is less than the full employment level. This level of aggregate demand corresponds to point *G* on the aggregate demand curve AD_1. This results in a situation of deficient demand. The resulting deflationary gap created due to deficient demand is equal to *FG*.

The deflationary gap is the difference between the level of aggregate demand required to establish the full employment equilibrium and the actual level of aggregate demand. The deflationary gap is a measure of the amount of deficiency of aggregate demand.

The deflationary gap will set in motion forces that will cause a decline in the economy's output, income and employment. At point *G*, the *AD*, curve lies below the 45° line. As a result, the aggregate demand *GY* is less than the level of output *OY*. Firms will experience an unplanned build-up of inventories of unsold goods. They will respond by reducing employment and cutting back production. This will reduce the economy's output, income

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and employment, until a new equilibrium is reached at point *E*. This is an equilibrium because the aggregate demand *EM* is equal to output *OM* (since point *E* lies on the 45° line).

It will be noted that point *E* is an **under employment equilibrium.** The equilibrium levels of output, income and employment corresponding to point *E* are less than the **full employment** levels of output, income and employment corresponding to point *F*. Thus, the **deficient demand caused deflationary gap and has pushed the economy into an under employment equilibrium.**

7.2.3 Effects of Deficient Demand

The impact or effects of deficient demand or deflationary gap are:

1. There is a fall in the general price level.
2. The producers incur losses or their profits are nil. There is a fall in the level of production as there are unsold stocks of goods.
3. Consumers are gainers because prices have gone down.
4. Fall in the level of national income.
5. Fall in the level of employment which leads to strikes and lockouts.
6. If there is oligopoly in the economy, the price of the commodities will remain the same but the level of production will decline.
7. It will lead to recession and depression in the trade cycle of an economy.

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7.3 DIFFERENCE BETWEEN EXCESS DEMAND AND DEFICIENT DEMAND

Table 7.1 gives the difference between excess and deficient demand.

Table 7.1 **Difference between Excess and Deficient Demand**

Excess Demand	Deficient Demand
Meaning	**Meaning**
1. It is a situation when *AD* > *AS* at the full employment level.	1. It is a situation when *AD* < *AS* at the full employment level.
2. In this *AD* rises and the *AD* curve shifts up.	2. In this *AD* falls and the *AD* curve shifts down.
3. Inflationary gap is the extent or difference between new higher *AD* at full employment level.	3. Deflationary gap is the extent or difference between new lower *AD* and original *AD* at full employment level.
4. Excess demand explains inflation.	4. Deficient demand explains deflation.
Effects	**Effects**
1. Continuous and persistent rise in prices.	1. Fall in the price level.
2. Producers get abnormal profits.	2. Producers' profits are nil.
3. Consumers are losers.	3. Consumers are gainers.
4. Real wages will fall. So, unions demand more wages which raises the cost of production.	4. Fall in the level of national income.

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5. No change in employment because the system is already in a state of full employment.	5. Fall in employment.
6. Rise in output (only if there is any unemployment).	6. Fall in output.
7. It leads to prosperity or boom conditions in the business cycle.	7. It leads to gloom, pessimism, recession and depression conditions in the business cycle.

7.4 TYPES OF POLICY MEASURES—FISCAL POLICY (OR CHANGE IN GOVERNMENT SPENDING) AND MONETARY POLICY (OR CHANGE IN AVAILABILITY OF CREDIT)

There are **two policy measures** to deal with problems of deficient and excess demand.

1. Fiscal policy measures and 2. Monetary policy measures

1. Fiscal Policy is the policy concerning taxation and expenditure of the government. These measures are also called change in government spending. Fiscal policy measures include:

(*a*) Changes in taxes (both direct and indirect taxes), and

(*b*) Changes in government expenditure (expenditure on public works programme etc.)

2. Monetary Policy is the policy concerning money supply and availability of credit in an economy. These measures are also called change in availability of credit. It is regulated by the central bank of the country. Monetary policy measures include:

(*a*) Quantitative measures such as bank rate, open market operations, cash reserve ratio (*CRR*) and statutory liquidity ratio (*SLR*), and

(*b*) Qualitative measures such as margin requirements, rationing of credit, moral suasion, etc.

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7.5 MEASURES TO CORRECT EXCESS DEMAND

The two main measures that can be taken to correct the problem of excess demand are:

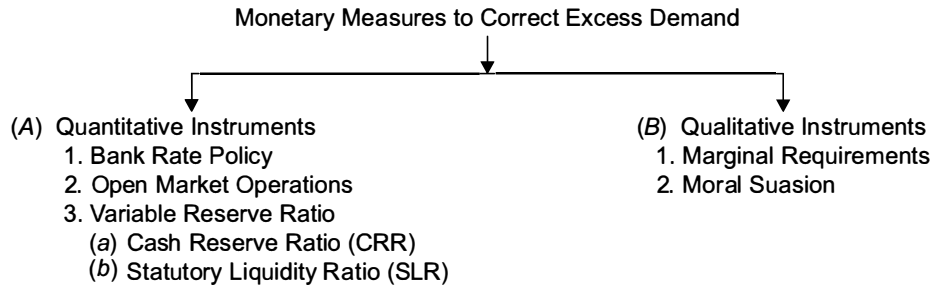
7.5.1 Monetary Measures to Reduce Money Supply or Restrict Availability of Credit

The Reserve Bank of India (*RBI*) is the Central Bank of the country. It is empowered to regulate credit creation and money supply in the economy. In a situation of excess demand. the *RBI* uses **various instruments of monetary policy to restrict the availability of credit.**

When availability of credit is restricted, it is called dear money. The instruments of monetary policy are divided into two parts, as shown in the chart below:

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Quantitative instruments are those general instruments which affect the amount of credit in the *whole* economy. **Qualitative instruments** are those *selective* instruments which affect the amount of credit in *specific areas* or regulate the *direction* of credit.

(*A*) Quantitative Instruments

1. **Bank Rate Policy.** *Bank rate* is defined as the rate of interest at which the *RBI* lends to the commercial banks. In a situation of excess demand, the *RBI increases* the bank rate. Commercial banks immediately increase their lending rate *i.e.*, interest rate which makes the credit dear. It discourages people to borrow money from the banks. People prefer to deposit in banks. Thus, their purchasing power goes down which reduces aggregate demand.
2. **Open Market Operations.** It is defined as buying and selling of eligible securities in the *bill market* by the *RBI*. In a situation of excess demand, *RBI* sells these eligible securities in its possession *to commercial banks* so that commercial banks' cash is blocked in them and their capacity to offer loans will be reduced. This is another method to restrict the availability of credit.
3. **Variable Reserve Ratio**

   (*a*) Cash Reserve Ratio (*CRR*). It is defined as the minimum percentage of total demand deposits which a commercial bank requires to keep with the *RBI* in the form of cash reserves. If it is 8%, it implies that every commercial bank has to keep 8% of its total deposits with the *RBI*. In a situation of excess demand, *RBI raises* the *CRR*. This will reduce the cash deposits left with commercial banks to be loaned out. This is another method to control the availability of credit.

   (*b*) Statutory Liquidity Ratio (*SLR*). It is defined as the minimum percentage of total deposits which a commercial bank has to keep with itself in the form of liquid assets. In a situation of excess demand, *RBI raises* the *SLR*. The result is the reduction in surplus cash reserves of the commercial banks which can be offered for credit. This will discourage credit in the economy.

(*B*) Qualitative Instruments

These instruments allow credit for priority sectors only. The major selective credit control method to correct the situation of excess demand are:

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1. **Marginal Requirement.** *Margin* is defined as the difference between the value of security and the amount borrowed against that security. *RBI* can fix different *margin requirement* for different uses such that credit is diverted into essential sectors only. In a situation of excess demand, *RBI raises* the marginal requirement. It implies that borrowers will get less credit against their securities. So, it will impose a restraint upon the borrowers and thus, keep down the volume of credit.
2. **Moral Suasion.** The word "Suasion" literally means persuasion on moral ground with no implied force. In this technique, the *RBI* issues letters to the banks encouraging them to exercise their control over credit and grant loans for *essential purposes* only and not for speculative purposes. It is a very useful method of restricting availability of credit in a situation of excess demand in India.

7.5.2 Fiscal Measures (or Reduced Budget Deficit)

Fiscal policy is the expenditure and revenue policy of the government. It is reflected in the *Budget* of a government. In a situation of excess demand, the *RBI* uses various instruments of fiscal policy to reduce budgetary deficit. Budgetary deficit is excess of expenditure over revenue. The instruments of fiscal policy used to control excess demand are:

(*a*) Revenue Policy. The main source of revenue to the government is through *taxes*. In a situation of excess demand, government ***raises the rates of all taxes,*** especially on the rich people. This reduces the purchasing power of the people and reduces both consumption and investment expenditures. In short, aggregate demand gets reduced and the revenue to the government increases.

(*b*) Expenditure Policy. In order to preserve the society and to improve the quality of life of the people, public expenditure is incurred by the state. The important items of public expenditure are defence, civil administration, social services and development expenditure. In a situation of excess demand, government **reduces its spending.** It will result in a fall in demand for goods and services. The $AD = C + I + G$ curve will shift downward showing fall in government expenditures. The fall in government expenditures should be equal to the inflationary gap.

(*c*) Deficit Financing. In order to correct excess demand, government should reduce the deficit financing or printing of notes to bring the excess demand down.

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7.6 MEASURES TO CORRECT DEFICIENT DEMAND

Situation of deficient demand is more difficult to control than the situation of excess demand. The measures suggested to control deficient demand are just the opposite of the measures suggested to control excess demand. The two main measures that can be taken to correct the problem of deficient demand are:

7.6.1 Monetary Measures to Increase Money Supply (or Increase Availability of Credit or Cheap Credit Policy)

In a situation of deficient demand, the RBI uses various instruments of monetary policy to expand availability of credit. **Cheap money policy are those instruments of monetary policy which will expand the availability of credit.** These are:

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(*A*) Quantitative Instruments

1. **Bank Rate Policy.** In a situation of deficient demand, the *RBI reduces* the bank rate. Commercial banks decrease their market interest rate. It makes credit cheaper. It encourages people to borrow money from the banks. Since investment is inversely related to the rate of interest, a fall in the rate of interest (other things being equal) will raise the investment expenditure.

2. **Open Market Operations.** In the situation of deficient demand, when the aim of the *RBI* is to encourage investment activities, it buys securities from the open market and release funds for the banks and the individuals. With more cash reserves the banks are in a position to extend large amount for loans. This increases the investment activities in an economy.

3. **Variable Reserve Ratios**

(*a*) Cash Reserve Ratio (*CRR*). During depression or deficient demand situation, *RBI reduces the CRR*. The result of reducing the *CRR* will obviously be seen in the surplus cash reserves with the banks which can be offered for credit. The banks credit creation power increases.

(*b*) Statutory Liquidity Ratio (*SLR*). *RBI* reduces *SLR* in situations of deficient demand. This will have expansionary effect on the credit position of the banks.

(*B*) Qualitative Instruments

1. **Marginal Requirement.** Marginal requirements are *reduced* in a situation of deficient demand. It implies that borrowers will get *more* credit against their securities. It will encourage borrowings.

2. **Moral Suasion.** During depression, the *RBI* issues instructions to member banks to *increase* the availability of credit to borrowers for non-essential purposes also.

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7.6.2 Fiscal Measures (or Stepped-up Investment)

Fiscal policy is the government's revenue and expenditure policy. The instruments of fiscal policy used to control deficient demand are:

(*a*) Revenue Policy. In a situation of deficient demand, the government should ***reduce taxes***, especially on poor people. It will increase the purchasing power of the people and they will spend more on consumption of goods and services. Thus, aggregate demand will rise and producers will step-up their investment to increase production.

(*b*) Expenditure Policy. In a situation of deficient demand, the government should ***raise its spending***, *i.e.*, there will be more economic activities in the economy like, building of roads, bridges, canals, etc. This will raise the level of employment. It will, in turn, increase the wages and the purchasing power. Thus, aggregate demand will rise.

(*c*) Deficit Financing. To correct deficient demand or to increase the demand in the economy, government should take resort to deficit financing or printing of notes to increase purchasing power of the economy.

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7.7 SUMMARY OF MEASURES TO CORRECT EXCESS AND DEFICIENT DEMAND

Table 7.2 gives the summary of measures to correct excess and deficient demand.

Table 7.2 **A Summary**

Measures to Correct Excess Demand	Measures to Correct Deficient Demand
A. Monetary measures or restricted availability of credit or dear money policy **(to reduce money supply):**	A. Monetary measures or increased availability of credit or cheap money policy **(to raise money supply):**
1. *Bank Rate*: It is raised.	1. *Bank Rate*: It is reduced.
2. *Open Market Operations*: *RBI* sells securities to commercial banks.	2. *Open Market Operations*: *RBI* buys securities from the open market.
3. *Legal Reserve Ratio* (*a*) *CRR*: It is raised. (*b*) *SLR*: It is raised.	3. *Legal Reserve Ratio* (*a*) *CRR*: It is reduced. (*b*) *SLR*: It is reduced.
4. *Marginal Requirement*: These are increased.	4. *Marginal Requirement*: These are reduced.
5. *Moral Suasion*: Moral persuasion is increased to grant credit for essential purposes only.	5. *Moral Suasion*: Moral persuasion is reduced to grant credit for essential purposes only.
B. Fiscal policy or reduced budget deficit:	B. Fiscal policy or stepped-up investment:
1. *Revenue Policy*: Rates of **taxes** are raised.	1. *Revenue Policy*: Rates of **taxes** are lowered.
2. *Expenditure Policy*: **Government spending** is reduced.	2. *Expenditure Policy*: **Government spending** is raised.
Net result: Budget deficit will reduce. This in turn will reduce deficit financing.	***Net result***: Budget deficit will rise. This in turn will require more deficit financing.

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Points to Remember

Problems of Excess and Deficient Demand

Both excess demand and deficient demand situations are economic evils because they bring about disequilibrium in the economy. Either the economic activity gets pushed up beyond limits as in case of excess demand or it sinks very low as in case of deficient demand. Excess demand is an inflationary situation and deficient demand is a deflationary situation. Deflation is just the opposite of inflation.

Policy Measures to Control Excess and Deficient Demand

Remedy for excess demand

1. In order to solve the problem of excess demand, the aggregate demand has to be reduced by an amount equal to the inflationary gap. The aggregate demand may be reduced by taking recourse either to fiscal policy or to monetary policy.
2. The various fiscal policy measures that will reduce aggregate demand and thus control the problem of excess demand are:
   (*a*) Reducing the level of government expenditure,

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(*b*) Increasing the amount of taxes, and

(*c*) A mix of reducing government expenditure and increasing tax rates.

3. The various monetary policy measures that will reduce aggregate demand and thus, control the problem of excess demand are:

(*a*) Increase in the bank rate,

(*b*) Sale of government securities in the open market by the central bank, and

(*c*) Raising *CRR* and *SLR*.

4. The monetary measures reduce the availability of credit in the economy and affect the investment component of the aggregate demand. Thus, the central bank should adopt dear money policy *i.e.,* restrict the availability of credit to control the problem of excess demand.

Remedy for deficient demand

1. In order to solve the problem of deficient demand, the aggregate demand has to be increased by an amount equal to the deflationary gap. The aggregate demand may be increased by taking recourse either to fiscal policy or to monetary policy.
2. The various fiscal policy measures that will increase aggregate demand and, thus, control the problem of deficient demand are:

(*a*) Increasing the level of government expenditure,

(*b*) Reduction in the level of taxes, and

(*c*) A mix of increasing government expenditure and decreasing the rate of taxes.

3. The various monetary policy measures that will increase aggregate demand and thus, control the problem of deficient demand are:

(*a*) Reduction in bank rate,

(*b*) Purchase of government securities in the open market by the central bank, and

(*c*) Reduction in *CRR* and *SLR*.

4. The monetary measures increase the availability of credit in the economy and affect the investment component of the aggregate demand. Thus, the central bank should adopt cheap money policy, *i.e.,* expand the availability of credit to control the problem of deficient demand.

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Test Your Knowledge

Very Short Answer Type Questions & MCQs **(*1 Mark*)**

1. Give meaning of deficient demand? (*AI 2008*)
2. What is meant by excess demand in Macro economics? (*AI 2009; Delhi 2009*)
3. Give the meaning of deflationary gap. (*Delhi 2008*; *Foreign 2009*)
4. Name any two fiscal policy measures for combating the problem of deficient demand (or to reduce deflationary gap).
5. Draw a diagram showing deflationary gap.
6. What is inflationary gap? (*Delhi 2008*)
7. Name any two fiscal policy measures for combating the problem of excess demand (or to reduce inflationary gap).

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8. Give the meaning of deflationary gap. (*Delhi 2010*)

9. Give the meaning of inflationary gap. (*AI 2010, 12*)

10. Define inflationary gap. (*AI 2014*)

11. Define deflationary gap. (*AI 2014*)

12. Give meaning of 'deficient demand' in macroeconomics. (*Foreign 2014*)

13. What is 'excess demand' in macroeconomics? (*AI 2014*)

Multiple Choice Questions

1. The various fiscal policy measures that will increase aggregate demand and, thus, control the problem of deficient demand are:
(*a*) Increasing the level of government expenditure
(*b*) Reduction in the level of taxes
(*c*) A mix of increasing government expenditure and decreasing the rate of taxes
(*d*) All of the above

2. The various monetary policy measures that will increase aggregate demand and thus, control the problem of deficient demand are:
(*a*) Reduction in bank rate
(*b*) Purchase of government securities in the open market by the central bank
(*c*) Reduction in *CRR* and *SLR*
(*d*) All of the above

3. The various monetary policy measures that will reduce aggregate demand and thus, control the problem of excess demand are:
(*a*) Increase in the bank rate
(*b*) Sale of government securities in the open market by the central bank
(*c*) Raising *CRR* and *SLR*
(*d*) All of the above

4. The various fiscal policy measures that will reduce aggregate demand and thus control the problem of excess demand are:
(*a*) Reducing the level of government expenditure
(*b*) Increasing the amount of taxes
(*c*) A mix of reducing government expenditure and increasing tax rates
(*d*) All of the above

Short Answer Type Questions **(*3/4 Marks*)**

1. Explain the problem of deficient demand in an economy. State two measures to solve it. (*AI 2008*)

2. Explain and graphically represent the concept of inflationary gap. Explain any one measure of removing this gap. (*Delhi 2008; Foreign 2006*)

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3. Explain and graphically represent the concept of deflationary gap. Explain any one measure of removing this gap. (*Delhi 2006*; *AI 2008*)
4. Explain briefly how changes in (*i*) government expenditure and (*ii*) bank rate can be helpful in correcting excess demand in an economy. (*Delhi 2006*)
5. Give the meaning of (*i*) aggregate demand, (*ii*) aggregate supply and (*iii*) excess demand. (*AI 2007*)
6. Give the meaning of (*i*) cash reserve ratio, (*ii*) bank rate and (*iii*) open market operations. (*Foreign 2007*)
7. Distinguish between inflationary gap and deflationary gap. (*AI 2008*)
8. Explain the meaning of deflationary gap with the help of a diagram. (*Delhi 2012*)

Long Answer Type Questions **(*6 Marks*)**

1. Explain the problem of 'excess demand' in an economy with the help of a diagram. Explain the role of bank rate in correcting it. (*Delhi 2007*)
2. What is 'deficient demand' in macroeconomics? Show it on a diagram. Explain the role of open market operations in correcting it. (*AI 2007*)
3. What is deficient demand in macroeconomics? How does the following affect it:
   (*i*) Changes in bank rate (*ii*) Changes in tax rates.
4. How can the problems of deficient demand and excess demand be solved with the help of monetary policy?
5. What is the meaning of fiscal policy? How does the following affect aggregate demand in an economy:
   (*i*) Changes in government expenditure (*ii*) Changes in tax rates.
6. How can the problems of excess demand and deficient demand be combated (or opposed)?
7. Explain the role of (*i*) Bank Rate and (*ii*) Margin requirements in influencing the availability of credit in an economy.
8. Explain the concept of 'inflationary gap'. Use diagram. Also explain one fiscal measure to correct it. (*Foreign 2008; AI 2009*)
9. Explain the concept of 'deflationary gap'. Use diagram. Also explain one monetary measure to correct it. (*Foreign 2008; AI 2009*)
10. Explain the role of the following in correcting 'deficient demand' in an economy: (*Delhi 2011*)
    (*i*) Open market operations
    (*ii*) Bank rate.
11. Explain the role of the following in correcting 'excess demand' in an economy: (*Delhi 2011*)
    (*i*) Bank rate
    (*ii*) Open market operations.
12. Explain the role of the following in correcting inflationary gap in an economy: (*AI 2011*)
    (*i*) Legal reserves
    (*ii*) Bank rate.

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13. Explain the role of the following in correcting deflationary gap in an economy: (*AI 2011*)

(*i*) Open market operations

(*ii*) Margin requirements

14. Explain the role of the following in correcting 'deficient demand' in an economy: (*Foreign 2011*)

(*i*) Government expenditure

(*ii*) Legal reserve.

15. Explain the role of the following in correcting inflationary gap in an economy: (*Foreign 2011*)

(*i*) Open market operations

(*ii*) Government expenditure

16. Explain the concept of 'excess demand' in macro-economics. Also explain the role of 'open market operation' in correcting it.

or

Explain the concept of 'deficient demand' in macro-economics. Also explain the role of Bank Rate in correcting it. (*Delhi 2012*)

17. Explain the concept of 'inflationary gap'. Also explain the role of 'legal reserves' in reducing it.

or

Explain the concept of 'deflationary gap'. Also explain the role of 'margin requirements' in reducing it. (*AI 2012*)

18. Explain the concept of 'deflationary gap'. Also explain the role of 'open market operations' in reducing it.

or

Explain the concept of 'excess demand'. Also explain the role of 'Bank Rate' in reducing it. (*Foreign 2012*)

19. Distinguish between inflationary gap and deflationary gap. State two measures by which these can be corrected. (*AI 2013*)

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Answers

Multiple Choice Questions

1. (*d*) **2.** (*d*) **3.** (*d*) **4.** (*d*)

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Value Based and Higher Order Thinking (HOT) Questions (*With Answers*)

Unit 7: Determination of Income and Employment

Q1. (*i*) What is a guideline?

(*ii*) Explain consumption function.

Ans. (*i*) The aggregate supply (*AS*) curve which is a 45° positively sloping line from the origin. It is also called ***a guideline.*** Every point on the *AS* curve is equidistant from the *x*-axis and the *y*-axis implying that total income is equal to total expenditure or spending. *i.e.*, $C + S$. If whole of national income is spent on consumption of goods and services, then $S = 0$. It is called break-even point.

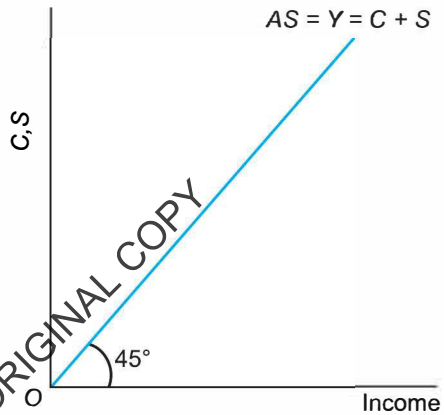


Fig. The *AS* curve where $AS = C + S$

(*ii*) The level of household consumption depends directly upon the level of disposable income (Y_d). Symbolically,

$$C = f(Y_d)$$

where,

Y_d = Disposable income. It is calculated as:

Disposable Income = Personal Income − Personal Taxes

If disposable income increases, household consumption expenditure increases. But by how much will consumption expenditure change to a change in disposable income, depends upon **propensity to consume**.

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Q2. Give saving function, curve and equation.

Ans. Saving function or propensity to save shows the relationship between income (Y) and saving (S). Saving is that part of income which is not consumed, *i.e.*, $S = Y - C$

Saving is a function of income. Symbolically,

$$S = f(Y)$$

According to **Keynes**, if income rises, saving also rises and vice-versa. The relationship between income and saving is graphically shown in Fig.

$$S = Y - C$$
$$= Y - (\bar{c} + bY)$$
$$= Y - \bar{c} + bY$$
$$S = -\bar{c} + (1 - b)Y$$

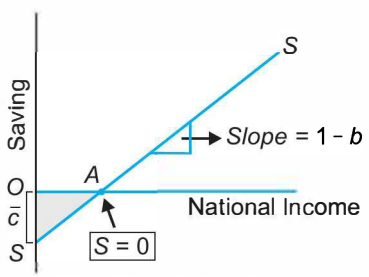


Fig. The Saving Curve

Q3. Show the adjustment mechanism when:

(*i*) $AD < AS$

(*ii*) $AD > AS$

Ans. (*i*) If $AD < AS$

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This situation is shown by *CN* line in Fig.

At income of *ON*,

$AD = MN$

and $AS = CN$

It is clear that $AS > AD$

Thus, Excess supply = *CM*

In this situation the economy will face recession. There will be unsold stock of goods. The producer will reduce the use of factors of production to cut down the production level. This will reduce the income level from *ON* to *OY*. The stability of the equilibrium will be restored at point *E*. Thus, when $AD < AS$, national income tends to fall.

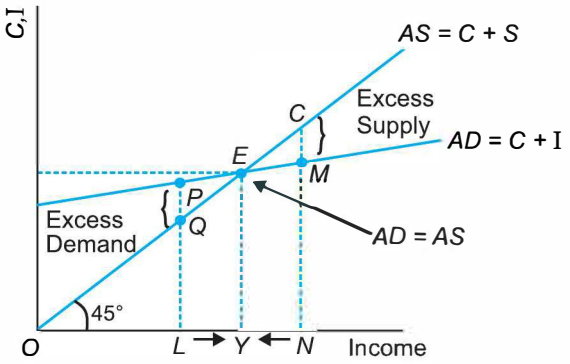


Fig. Two Situations when *AD* is Not Equal to *AS*

(*ii*) If $AD > AS$

This situation is shown by *PL* line in Fig.

At income level of *OL*,

$AD = PL$

and $AS = QL$

It is clear that $AD > AS$

Thus, Excess demand = *PQ*

This will bring abnormal profits to the producers who will expand the level of production. The increase in output will raise the income level from *OL* to *OY*. The stability of the equilibrium will be restored at point *E* where $AD = AS$. Thus, when $AD > AS$, national income tends to increase.

Q4. Let the consumption function be given as:

$C = 100 + 0.7\,Y$

Derive saving function.

Ans. Thus, saving function can be derived as $S = Y - C$

$$S = Y - (100 + 0.7\,Y)$$
$$= Y - 100 - 0.7\,Y$$
$$S = -100 + 0.3\,Y$$

Q5. Give the relationship between multiplier, *MPC* and *MPS*.

Ans. There is a direct relationship between multiplier and *MPC* and inverse relationship between multiplier and *MPS*. It is mathematically proved as follows:

At equilibrium, we have

$Y = C + I$

i.e., income equals the sum of consumption plus investment.

We can use the consumption function to substitute *C* with the expression $\bar{c} + bY$, to give

$$Y = \bar{c} + bY + I$$

so $Y - bY = \bar{c} + I$

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or $Y(I - b) = \bar{c} + I$

or $Y = \frac{1}{(1-b)}(\bar{c} + I)$

Since b is nothing but the *MPC*, we have

$$Y = \frac{1}{(1 - MPC)}(\bar{c} + I)$$

To find out the effect of a change in investment on income, we differentiate the equation to get:

$$\Delta Y = \frac{1}{(1 - MPC)} \Delta I$$

or (Change in income) = (Multiplier) × (Change in Investment)

$$\Rightarrow \quad \frac{\Delta Y}{\Delta I} = \frac{1}{(1 - MPC)} = \frac{1}{MPS}$$

The multiplier is equal to $\frac{1}{(1 - MPC)}$. It is the number by which the change in investment must be multiplied in order to determine the resulting change in output.

As we can see, **the size of the multiplier depends on value of the *MPC*.**

Q6. In an economy, *MPC* = 0.75. What will be the effect on total income if investment increases by ₹ 300 crores?

Ans. $K = \frac{1}{MPS} = \frac{1}{0.25} = 4$

$\therefore \quad \Delta Y = K \times \Delta I = 4 \times 300 = ₹ 1{,}200$ crores

Q7. In an economy investment increases by ₹ 200 crores. As a result, total income increases by ₹ 1,000 crores. Calculate *MPC*.

Ans. $K = \frac{\Delta Y}{\Delta I} = \frac{1{,}000}{200} = 5 = \frac{1}{MPS}$

$5 = \frac{1}{MPS} \Rightarrow MPS = \frac{1}{5} = 0.2$

$\therefore MPC = 0.8$

Q8. Explain deflationary gap. What does it measure?

Ans. The *y*-axis measures consumption demand, investment demand, and their sum is the aggregate demand. The *x*-axis measures the level of output and income. *OY* is the full employment level of output and income. *AD* and AD_1 are two parallel aggregate demand curves, differing only by the amount of investment expenditure.

For the economy to be at a full employment equilibrium, the aggregate demand should be for a level of output equal to the full employment level of output *OY*. In other words, aggregate demand should be equal to *YF*. The economy will then be in a full employment equilibrium, corresponding to the point *F* on the aggregate demand curve *AD* and the economy will produce full employment level of output *OY*.

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Suppose, that the aggregate demand is for a level of output *GY*. *GY* is less than *FY*. Then aggregate demand is for a level of output which is less than the full employment level. This level of aggregate demand corresponds to point *G* on the aggregate demand curve AD_1. This results in a situation of deficient demand. The resulting deflationary gap created due to deficient demand is equal to *FG*.

The deflationary gap is the difference between the level of aggregate demand required to establish the full employment equilibrium and the actual level of aggregate demand. The deflationary gap is a measure of the amount of deficiency of aggregate demand.

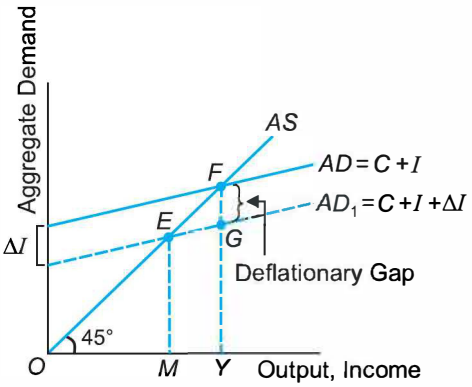


Fig. Deficient Demand

Q9. What is the difference between consumption expenditure and autonomous consumption expenditure?

Ans. Consumption expenditure is the total expenditure on purchasing good and services for private consumption purposes by all households in an economy.

Autonomous Consumption Expenditure is the amount of consumption expenditure when income is zero

Q10. Define break-even point with respect to consumption and saving.

Ans. Break-even point occurs when all income is consumed. In other words, savings are zero.

Q11. There is increase in investment of ₹ 100 crore in an economy. *MPC* is 1. What can you say about total increase in income? Calculate.

Ans. Since, $MPC = 1 \Rightarrow MPS = 1 - MPC = 0$

ΔI = ₹ 100 crores... (given) $\quad \therefore \quad K = \frac{1}{MPS} = \frac{1}{0} = \infty$ (infinity).

If multiplier is infinity and *MPC* = 1, it means whole of the income is consumed and not saved. Thus, with infinite multiplier effect, the change in income (ΔY) is also infinity.

Q12. Complete the following table:

Income (*Y*) (₹)	Consumption (*C*) (₹)	*MPC*	*APS*
0	12		
20	26	—	—
40	40	—	—
60	54	—	—

Ans.

Income (*Y*) (₹)	Change in Income (ΔY) (₹)	*C* (₹)	ΔC (₹)	$S = Y - C$	$MPC = \frac{\Delta C}{\Delta Y}$	$APS = \frac{S}{Y}$
0	—	12	—	− 12	—	—
20	20	26	14	− 6	0.7	− 0.3
40	20	40	14	0	0.7	0
60	20	54	14	6	0.7	0.1

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NCERT Textual Questions with Answers

Unit 7: Determination of Income and Employment

Q1. What is marginal propensity to consume? How is it related to marginal propensity to save?

Ans. Marginal Propensity to Consume (*MPC*) is defined as the ratio of change in consumption to change in income.

Symbolically, $MPC = \frac{\Delta C}{\Delta Y}$

The value of *MPC* always lies between 0 and 1, *i.e.*, $0 < MPC < 1$.

Marginal Propensity to Save (*MPS*) is the ratio of change in savings to change in income.

Symbolically, $MPS = \frac{\Delta S}{\Delta Y}$

The value of *MPS* depends on the value of *MPC*. If *MPC* = 0.90, then *MPS* = 0.10.

Relationship between *MPC* and *MPS*: There is unique relationship between *MPC* and *MPS*. The sum of the *MPC* and *MPS* is always equal to one.

Symbolically, $MPC + MPS = 1$

The relation is derived as follows:

We have $Y = C + S \Rightarrow \Delta Y = \Delta C + \Delta S$

Dividing both sides of the equation by ΔY, we have

$\frac{\Delta Y}{\Delta Y} = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y}$ Thus, $1 = MPC + MPS$

or $MPC + MPS = 1$ This equation implies that

$MPC = 1 - MPS$ or $MPS = 1 - MPC$

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Q2. What is the difference between ex ante investment and ex post investment?

Ans. Ex ante investment. It is the planned, desired or intended investment during a particular period.

Ex post investment. It is a realised investment. It is equal to ex ante investment + unplanned investment. Ex post investment can be equal to ex ante investment, if unplanned investment = 0.

Q3. What do you understand by 'parametric shift of a line'? How does a line shift when its (*i*) slope decreases, and (*ii*) its intercept increases?

Ans. Movement Along a Curve *vs.* Shift of a Curve

Let $C = \bar{c} + bY$ be the consumption function

Also Let $\bar{c} = 2$ and $b = 0.8$. Thus, $C = 2 + 0.8Y$

Consider two situations:

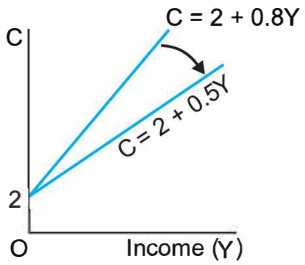
(1) When b changes

(2) When $\bar{c}$ changes.

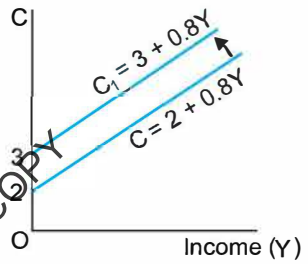
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(*a*) When *b* changes–*b* is the slope of the consumption curve, when *b* decreases from 0.8 to 0.5, then consumption curve (which is a straight line) swings downwards. This is called a Parametric shift of a graph. It is shown in adjoining fig. Thus, when slope decreases the curve shifts downward and when slope increases the curve shifts upward. It is called parametric shift of a graph.



(*b*) When $\bar{c}$ changes–It is the autonomous part of the consumption function. It graphically gives the intercept of the consumption curve. If increases from 2 to 3, there will be parallel upward shift in the consumption curves. It is shown in adjoining fig.



Thus, when slope changes, there is parametric shift in the curve. When intercept changes, there are parallel shifts in the curve.

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Q4. What is 'effective demand'? How will you derive the autonomous expenditure multiplier when price of final goods and the rate of interest are given?

Ans. Effective Demand Principle

For simplicity we assume a constant price of final goods and constant rate of interest over short run to determine the level of aggregate demand for final goods in the economy. We also assume that the aggregate supply is perfectly elastic at this price. Under such circumstances, aggregate output is determined solely by the level of aggregate demand. This is known as effective demand principle.

Q5. Measure the level of ex ante aggregate demand when autonomous investment and consumption expenditure (*A*) is ₹ 50 crores, and *MPS* is 0.2 and level of income (*Y*) is ₹ 4000 crores. State whether the economy is in equilibrium or not (cite reasons).

Ans. $MPC = 1 - MPS = 1 - 0.2 = 0.8$, $Y =$ ₹ 4,000 crores

$$AD = C + \bar{I} = \bar{C}_0 + CY + \bar{I} \text{ where } C = MPC$$

$$= \bar{C}_0 + \bar{I} + CY$$

$$AD = A + CY \text{ where, } A = \bar{C}_0 + \bar{I}$$

$$= 50 + 0.8\,(4000) = ₹\ 3{,}250$$

AS or $Y =$ ₹ 4,000

Here, aggregate demand is less than aggregate supply. Hence, the economy is not in equilibrium.

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Q6. Explain 'Paradox of Thrift'.

Ans. Paradox of Thrift

If all the people of the economy increase the proportion of income they save. (*i.e.* if the *MPS* of the economy increases), the national income in the economy will not increase. This result is known as the Paradox of Thrift. It states that as people become more thrifty, they end up saving more. As a result, saving curve shifts upwards and national income falls.

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Government Budget and the Economy

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This Unit Contains

8. Government Budget and the Economy

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Government Budget and the Economy



Chapter Scheme

8.1 Government Budget
- 8.1.1 Meaning
- 8.1.2 Objectives of Budget
- 8.1.3 Impact of Budget

8.2 Components of the Government Budget

8.3 Budget Receipts
- 8.3.1 Meaning
- 8.3.2 Components—Revenue Receipts and Capital Receipts

8.4 Budget Expenditure
- 8.4.1 Meaning
- 8.4.2 Components
  1. Plan Expenditure and Non-Plan Expenditure
  2. Revenue Expenditure and Capital Expenditure
  3. Developmental and Non-developmental Expenditure

8.5 Balanced, Surplus and Deficit Budgets

8.6 Measures of Government Deficits
- 8.6.1 Revenue Deficit
- 8.6.2 Fiscal Deficit
- 8.6.3 Primary Deficit

- **Solved Numerical Problems**
- **Points to Remember**
- **Test Your Knowledge**
- **Answers to MCQs**
- **Annexure: Fiscal Policy**

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8.1 GOVERNMENT BUDGET

8.1.1 Meaning

A Budget shows the financial accounts of the previous year, the budget and revised estimates of the current year and the budget estimates of coming year.

A government budget is a statement showing itemwise estimated receipts and estimated expenditures under various heads during a **fiscal year** which runs from **April 1 to March 31 of the following year.**

Article 112 of the Constitution of India states that "an annual financial statement" will be placed before both Lok Sabha and Rajya Sabha. This is called the budget of the Central Government.

8.1.2 Objectives of Budget

Objectives of Budgetary policy are:

1. **Redistribution of Income and Wealth.** Government through fiscal tools of taxation, subsidies and transfer payments brings about 'fair' distribution of income. Equitable distribution of income and wealth is a way to bring social justice.
2. **Reallocation of Resources.** The government, through its budgetary policy reallocates resources so that social and economic objectives are met. Private firms do not find it

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profitable to produce public goods like park, bridges, national defence, etc. Government reallocates its resources and produces these goods which maximises social benefits.

3. **Economic Stability.** The government tries to prevent business fluctuations and maintain price and employment stability. Economic stability stimulates inducement to invest and increases the rate of growth and development.
4. **Managing Public Enterprises.** The budgetary policy of the government shows interest of the government to increase the rate of growth through public enterprises. Often, public sector enterprises are encouraged in areas of natural monopolies. (*e.g.*, water lines, railways etc. where there are advantages if a single firm produces the good).

8.1.3 Impact of Budget

The budget *impacts* an economy at three levels:

(*a*) **It brings aggregate fiscal discipline level**, *i.e.*, having control over expenditure. By fiscal discipline we mean a situation of an ideal balance between revenues and expenditures of the government. There must be essential check on expenditures since revenues of the government are limited.

(*b*) **It brings better allocation of resources**, *i.e.*, priority must be given to social sectors. Government through its two important budgetary instruments of taxation and subsidies will allocate resources to those areas where society's welfare is maximum. In this way, it will bring about equitable distribution of income and wealth.

(*c*) **It has effective and efficient provision of programmes**. Effectiveness measures the extent to which government achieves its targets. Efficiency refers to the minimum cost per unit of goods and services provided.

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8.2 COMPONENTS OF THE GOVERNMENT BUDGET

Two components of Government Budget are:

1. **Revenue Budget.** It consists of revenue receipts of the government and the expenditure met from such revenues.
2. **Capital Budget.** It consists of capital receipts and payments.

Fig. 8.1 gives the components of the government's budget.

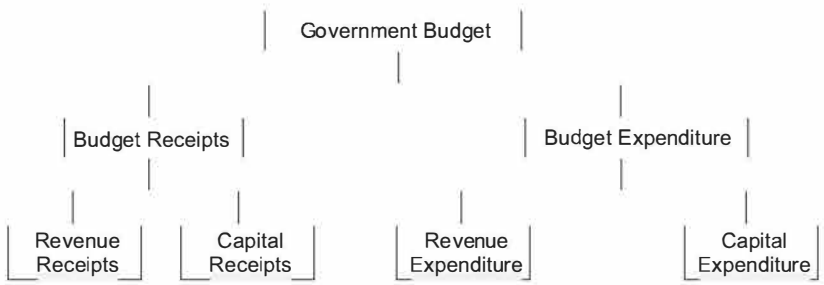


Fig. 8.1 Components of the Government Budget

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8.3 BUDGET RECEIPTS

8.3.1 Meaning

Government needs funds to finance its activites. Such funds are raised from various sources. The sources can be taxes, prices of goods and services supplied by public enterprises, fees, fines, gifts, grants, etc. Thus, *budget receipts are estimated money receipts of the government from all sources during the fiscal year.*

8.3.2 Components

The main components of government or public revenue are divided into two main categories—Revenue receipts and Capital receipts. Our Constitution, under Article 112, makes it compulsory to divide our budget under revenue and capital receipts. Table 8.1 gives the detail of revenue and capital receipts.

1. Revenue Receipts

Revenue budget takes care of the current receipts and running expenses like tax revenue; interest, dividends and profits. Revenue receipts are receipts under revenue account.

This receipt does not either create a liability or lead to reduction in assets. Revenue receipts can be divided into tax-revenue and non-tax revenue.

(*a*) Receipts from Tax Revenue

What is a Tax? A tax is a legally compulsory payment imposed by the government. Government imposes tax on income, manufacturing, sales, transportation, wealth, gifts, properties, exports, imports, etc.

Types of Taxes: There are two types of taxes:

(*i*) Direct Tax. ***When the liability to pay a tax and the burden of that tax fall on the same person, it is called a direct tax.*** *For example,* income tax is a direct tax because the liability of paying this tax is of the person on whose income it is levied and its burden also falls on him. The burden of this tax **cannot be shifted** on to others *i.e.*, impact and incidence are on the same person. Some other *examples* of direct tax are gift tax, wealth tax, corporation tax, *etc.*

(*ii*) Indirect taxes are levied on goods and services. The burden of an indirect tax can be shifted, *i.e.*, impact and incidence are on different persons. *For example,* sales tax is an indirect tax because the liability to pay sales tax is that of the shopkeeper but he shifts the burden of this tax on the customers. Some other *examples* are entertainment tax, tax on services, excise duty, etc.

(*b*) Receipts from Non-Tax Revenue

What is Non-Tax Revenue? Non-tax revenue refers to the revenue receipts of the government from sources other than the tax.

Type of Non-Tax Revenues: They are of following types:

(*i*) Commercial Revenue. *It is revenue received by the government by selling the goods and services produced by the government agencies. Examples:* Payments for postage, toll, interest on funds borrowed from government credit corporations, etc. It also includes interest and dividend on investments made by the government.

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(*ii*) Administrative Revenue. It is revenue that arises from administrative function of the government.

Examples:

(*i*) ***Fees.*** A payment to defray the cost of each recurring service undertaken by the government. It gives a special advantage to the fee payer, *e.g.*, college fees, registration fees, etc.

(*ii*) ***Fines and Penalties.*** A payment for infringement of Law.

(*iii*) ***Forefeitures.*** A penalty imposed by the court for non-compliance with orders.

(*iv*) ***Escheat.*** A claim of the government on the property of a person who dies without having any legal heirs or without leaving a will.

2. Capital Receipts

Capital budget covers the creation and disposal of assets and liabilities. Capital receipts are receipts under capital account. Capital receipts include market borrowings, external loans, recoveries of loans and advances made by the government and provident fund. ***This receipt either creates a liability or leads to reduction in assets.*** For example, **disinvestment** of *PSU*. In the budget, capital receipts are classified into three groups:

(*i*) Recoveries of Loans. It includes recovery of loans granted by the central government to state and union territory governments and other parties. It is a capital receipts because it reduces financial assets of the government.

(*ii*) Borrowings and other Liabilities. Borrowing creates a liability. Therefore, funds raised from borrowings are treated as capital receipts. Government raises loans from the market, Reserve Bank of India, foreign governments and other bodies.

(*iii*) Other Receipts. Other receipts include capital receipts other than the recovery of loans and borrowing. Funds raised from 'disinvestment' is one such receipt. **Disinvestment** *means selling a part or whole of the shares (i.e., equity) of the public sector enterprises held by government*. It is defined as withdrawl of ones investment in a company. It is called a capital receipt because it reduces the assets of the government.

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Table 8.1 **Components of Public Revenue**

Revenue Receipts	Capital Receipts
1. Components *a*. Tax Revenue (*i*) Taxes on income and expenditure, *i.e.*, income tax, corporation tax, expenditure tax. (*ii*) Taxes on property and capital transactions, *i.e.*, estate duty, wealth tax, gift tax, land revenue, etc. (*iii*) Taxes on commodities and services, *i.e.*, custom duties, union excise duties and other miscellaneous receipts. *b*. Non-Tax Revenue Commercial revenue– (*i*) Interest receipts, dividends and profits.	1. Components (*a*) Market borrowings including special bonds. (*b*) External loans raised by the central government from abroad. (*c*) Recoveries of loans and advances made by the Central Government (*d*) Provident funds (State Provident Funds and Public Provident Funds).

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(*ii*) Administrative revenue—
fees, fines, penalties, forfeitures. escheat.

2. These receipts do not create any corres-ponding liability for the government.	2. These receipts create a liability for the govern-ment.
3. These receipts do not cause any reduction in assets of the government.	3. These receipts cause reduction in assets of the government.
4. These are regular and recurring in nature.	4. These are irregular and non-recurring in nature.

8.4 BUDGET EXPENDITURE

8.4.1 Meaning

Budget expenditure is the expense which the government incurs for its own maintenance as also for the society and the economy as a whole. Budget expenditure is defined as the expenditure of the central, state and local governments on various social, economic and political activities in the country. The **objective** of such expenditure is to promote public welfare, *i.e.*, budget expenditure should be on such areas which help in achieving the objectives of fiscal policy.

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8.4.2 Components

The two components of budget expenditure are plan and non-plan expenditure as shown in Fig. 8.2.

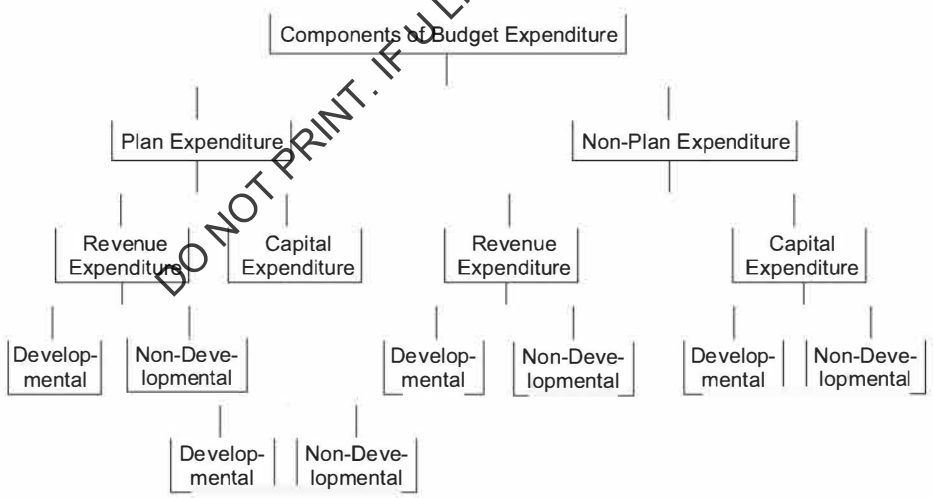


Fig. 8.2 Components of Budget Expenditure

1. Plan Expenditure and Non-Plan Expenditure (Not in Syllabus)

(*i*) Plan Expenditure. *It is the expenditure to be incurred during the year on the programmes under the current five year plan.* It is incurred on financing the central plan relating to different sectors of an economy. *For example,* the assistance provided by the Central Government for the plans of States and Union Territories is a plan expenditure.

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(*ii*) Non-Plan Expenditure. *Expenditure other than the expenditure related to the current Five-Year Plan is treated as non-plan expenditure.*

Example: Study this situation. Plan expenditure sanctions that a public building be constructed. After the building was constructed, it was maintained poorly because non-plan expenditure for maintenance was not sanctioned. It led to a situation where public building became unusable. It is necessary to ensure that the capital stock created (*i.e.,* building) does not become unusable. Thus, the expenditure on maintenance may be a non-plan expenditure but in this situation non-developmental expenditure is important and should be sanctioned.

2. Revenue Expenditure and Capital Expenditure

Both plan and non-plan expenditures are further subdivided into revenue and capital expenditures:

(*i*) Revenue Expenditure

1. Revenue expenditure neither creates any asset nor reduces any liability of the government.
2. It is incurred for normal running of government departments and provision of various services.
3. It is recurring in nature. The expenditure is spent by government on day-to-day activities.
4. *For example:* salaries, pensions, interest payments, subsidies, grants, etc.

(*ii*) Capital Expenditure

1. Capital expenditure either creates an asset or reduces a liability of the government.
2. It is incurred mainly for acquisition of assets and granting of loans and advances.
3. It is non-recurring in nature.
4. *For example:* (*a*) expenditure on purchasing land, building, shares, etc. (*b*) loans granted to the States and Union Territories, foreign governments, public enterprises and other parties. (*c*) Repayment of loans as it reduces the liabilities of the government.

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Items categorised as Revenue and Capital Expenditure

Are the following revenue expenditure or capital expenditure? Give reason.

1. Subsidies.

Ans. It is a revenue expenditure as it neither creates any asset nor reduces any liability of the government.

2. Defence capital equipments purchased from Germany.

Ans. It is a capital expenditure as it increases asset of the government.

3. Grants given to State Governments. (*AI 2006*)

Ans. It is a revenue expenditure as it neither creates any asset nor reduces any liability of the government.

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4. Construction of school buildings. (*AI 2006*)

Ans. It is a capital expenditure as it increases asset of the government.

5. Expenditure incurred on administrative and defence services.

Ans. It is a revenue expenditure as it neither creates any asset nor reduces any liability of the government.

6. Repayment of loans. (*AI 2006*)

Ans. It is a capital expenditure as it reduces the liability of the government.

3. Developmental and Non-Developmental Expenditure (Not in Syllabus)

Developmental expenditure directly adds to country's flow of goods and services. Non-developmental expenditure does not add to country's flow of goods and services. Budget expenditure of a government, whether plan or non-plan, revenue or capital, can also be classified into developmental and non-developmental expenditure.

(*i*) Non-developmental Expenditure. Expenditure on essential general services of the government is called non-developmental expenditure. *For example:* expenditure on defence and administration. Non-developmental expenditure is an essential part of the development process. While it does not directly contribute to the national product, it lubricates the wheels of economic development.

(*ii*) Developmental Expenditure. Expenditure on activities which are directly related to economic and social development of a country is called developmental expenditure. *For example:* expenditure on agriculture and industrial development, education, health, **social welfare** or **public goods** like parks, police, fire protection, scientific research, etc.

(Note: Value added questions on public goods asked is 2014 Question Paper are given on page 8.21)

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8.5 BALANCED, SURPLUS AND DEFICIT BUDGETS

A budget may be unbalanced or balanced. They are explained as follows:

1. Unbalanced Budget

In this, receipts are not equal to expenditures of the government. It is of two kinds:

(*a*) Surplus Budget. *It is one where estimated revenues are more than estimated expenditures.* It lowers aggregate demand. It is a good strategy to control inflation where the economy is in over-employment equilibrium due to excess demand. It is a poor strategy to control deflation.

(*b*) Deficit Budget. *It is one where estimated revenue is less than estimated expenditure.* It is a good policy to control recession when an economy is in an underemployment equilibrium level. It is not a sign of government inefficiencies. It is a planned strategy of the government to fight recession when the economy is in underemployment equilibrium due to deficit demand. It is not desirable during periods of inflation when Aggregate Demand exceeds Aggregate Supply at full employment level.

2. Balanced Budget

It is one when estimated revenues are equal to estimated expenditures. In other words, amount of tax is equal to the amount of expenditure. This kind of budget leads to slight increase in aggregate demand. Balanced budget is a good policy which can bring an economy to a

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full employment equilibrium level. It brings about financial stability. **But it is not good for a less developed country like India.** In such a country, the government should have more expenditures (than revenue) which will raise aggregate demand.

8.6 MEASURES OF GOVERNMENT DEFICITS

Generally, in developing countries the budget has a deficit showing excess of expenditure over the revenue. A distinction is necessary between three *types* of deficits namely:

1. Revenue Deficit
2. Fiscal Deficit
3. Primary Deficit

8.6.1 Revenue Deficit

Revenue deficits are defined as the excess of revenue expenditure over revenue receipts. In other words, it is the balance of Revenue Budget of the Union Budget in which there are two parts revenue receipts and revenue expenditure. Mathematically, it is calculated as:

Revenue Deficit = Revenue Expenditure − Revenue Receipts

where,

Revenue Expenditure = Interest payments + Non-interest expenditure (subsidies)

Revenue Receipts = Tax revenue + Non-tax revenue (*i.e.,* Interest + Grants-in-aid)

Implications of Revenue deficit

It indicates that government is not able to meet its current expenses *i.e.*, revenue expenditure completely from its current income. It reflects government's failure. Suppose there is a revenue deficit in government budget, it implies the following:

(*i*) Dissavings. Revenue deficit shows dissavings on government account. It reveals that as the current expenses become greater than the current income government withdraws its savings to meet this uncovered gap. As a result, volume of savings decreases.

(*ii*) Increased Liability of the Government. When government tries to fill-up this gap by borrowing, it leads to creation of burden on it as well as on the future generations to repay the loan along with interest.

(*iii*) Vicious Circle of Debt Trap. When it becomes compulsory for the government to take loan and meet its consumption expenditure then payment of interest increases. Sometimes the government borrows again to repay the loan. As a result, debt burden tends to accumulate. The government falls in the grip of vicious circle of debt trap.

(*iv*) Reduction of Assets. At times government has no option but to sell its share of PSUs *i.e.*, disinvestment. It leads to reduction of assets.

(*v*) Inflationary Pressure. When government borrows funds either from Central Bank or from abroad and use them to meet its consumption expenditure, it leads to inflationary pressure in the economy. It is because borrowing increases money supply in the economy.

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8.6.2 Fiscal Deficit

Fiscal deficit is a wider concept. It is sum of *borrowings and other liabilities of the government*. It is calculated by the formula:

Fiscal Deficit = **Total Expenditure − Total Receipts other than Borrowings and other Liabilities**

= [Revenue Expenditure + Capital Expenditure] − [Revenue Receipts + Capital Receipts other than Borrowings and Other Liabilities]

= [Revenue Expenditure + Capital Expenditure]
− [Revenue Receipts + Recoveries of Loans + Other Receipts]

= Borrowings and other Liabilities

Implications of Fiscal Deficit

Fiscal deficit reflects the borrowing requirements of the government during the budget year. A high fiscal deficit implies more borrowings. Generally, implications of fiscal deficit are same as revenue deficit. It is because revenue expenditure and revenue receipts are also included in budget receipts and total budget expenditure of the government.

In some cases fiscal deficit is possible without revenue deficit such as (*i*) when revenue budget is balanced and capital budget shows a deficit, and (*ii*) when revenue budget is in surplus and deficit in capital budget is greater than the surplus of revenue budget.

Some additional implications of fiscal deficit are as follows:

(*i*) Wasteful Expenditure. Generally, fiscal deficit leads to wasteful and unnecessary expenditure of the government. It creates inflationary pressure in the economy.

(*ii*) Partial Use. If government borrows for economic growth and development in the economy, then it accelerates the process of economic growth. It raises level of output by raising productive capacity in the economy. But here, a part of borrowing is used for interest payment. Interest payment is revenue expenditure which does not create any asset nor reduce liability of the government.

(*iii*) Retards Growth. Borrowing also retards **future growth**.

8.6.3 Primary Deficit

Primary deficit is defined as fiscal deficit minus interest payments.

Primary Deficit = Fiscal Deficit − Interest Payments

Implications of Primary Deficit. Primary deficit indicates borrowing requirements of the government to meet deficit net of interest payments.

Implications of primary deficit are:

(*i*) It shows how much is government borrowing under compulsion of interest payments and how much to create more future problem in the economy.

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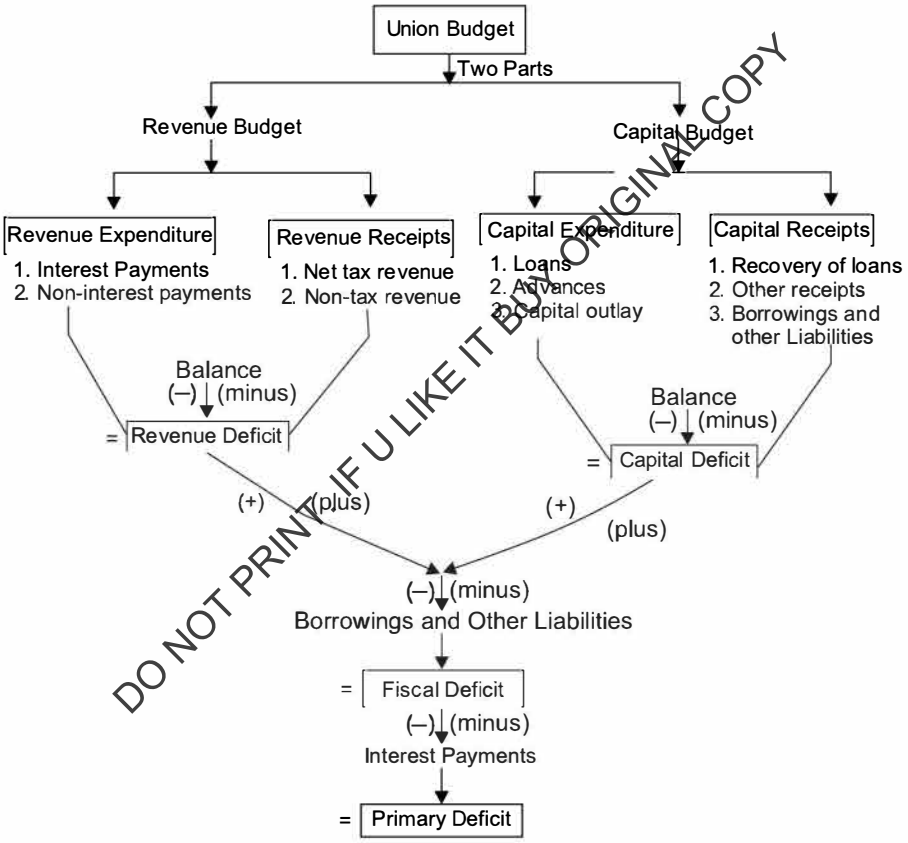
(*ii*) It indicates that how much government borrowing is going to meet expenses other than interest payments.

(*iii*) It is a basic measure of fiscal irresponsible behaviour of the government.

(*iv*) A high primary deficit indicates that government is not alive to the problems created by borrowings whereas a low deficit indicates that government is concerned and worried with future problems.

(*v*) If primary deficit is zero then it shows that fiscal deficit (*i.e.*, borrowing) is equal to interest payments.

The following figure summarises the deficits:



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Fig. 8.3 Calculation of the Deficits

SOLVED NUMERICAL PROBLEMS

Illustration 1. Calculate: (*a*) Revenue Deficit, (*b*) Fiscal Deficit, and (*c*) Primary Deficit.

Items	₹ (in crores)
1. Revenue receipts	200
2. Revenue expenditure	300
3. Capital receipts	160
4. Capital expenditure	60

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5. Recoveries of loans and other receipts	30
6. Borrowings and other liabilities	130
7. Interest payments	90

Solution.

(*a*) Revenue Deficit = Revenue Expenditure − Revenue Receipts
= 300 − 200
= ₹ 100 crores.

(*b*) Fiscal Deficit = Total Expenditure − Revenue Receipts − Recoveries of Loans − Other Receipts
= (300 + 60) − 200 − 30 = 360 − 230
= ₹ 130 crores.

(*c*) Primary Deficit = Fiscal Deficit − Interest payments
= 130 − 90 = ₹ 40 crores.

Illustration 2. A government shows primary deficit of ₹ 4,400 crores. The revenue expenditure as interest payment in ₹ 400 crore. How much is the fiscal deficit?

Solution.

Fiscal Deficit = Primary deficit + Interest payment
= ₹ 4,400 cr + ₹ 400 = ₹ 4,800 crores.

Illustration 3. The following figures are based on budget estimates of Government of India for the year 2001–2002

Items	₹ (in billions)
(*a*) Revenue receipts	**2,31,745**
(*i*) Tax Revenue	1,63,031
(*ii*) Non-tax revenue	68,714
(*b*) Capital receipts	**1,43,478**
(*i*) Recoveries of Loans	15,164
(*ii*) Other receipts (mainly PSU disinvestment)	12,000
(*iii*) Borrowings and other liabilities	1,16,314
(*c*) Revenue expenditure	**3,10,566**
(*i*) Interest payments	1,12,300
(*ii*) Major subsidies	27,845
(*iii*) Defence expenditure	1,70,421
(*d*) Capital expenditure	**64,657**
(*e*) Total expenditure	**3,75,223**
(*i*) Plan expenditure	1,00,100
(*ii*) Non-plan expenditure	2,75,123

Calculate (*a*) Fiscal deficit (*b*) Revenue deficit and (*c*) Primary deficit

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Solution.

(*a*) Fiscal deficit = Total expenditure − Revenue receipts − Non-debt capital receipts (Recovery of loans and Disinvestment of PSUs)
= 3,75,223 − 2,31,745 − 15,164 − 2,000
= ₹ 1,16,314 billions

(*b*) Revenue deficit = Revenue expenditure − Revenue receipts
= 3,10,566 − 2,31,745
= ₹ 78,821 billions

(*c*) Primary deficit = Fiscal deficit − Interest payments
= 1,16,314 − 1,12,300
= ₹ 4,014 billions

Illustration 4. From the budget estimates of Government of India for the year 2000-2001. Calculate: (*a*) Revenue deficit (*b*) Fiscal deficit and (*c*) Primary deficit:

Items	₹ (in crores)
(*a*) Revenue Receipts	2,035
(*b*) Revenue Expenditure	2,811
(*c*) Capital receipts	1,343
(*d*) Capital Expenditure	574
(*e*) Recoveries of loans and other receipts	230
(*f*) Borrowing and other liabilities	1,113
(*g*) Interest payments	1,000

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Solution.

(*a*) Revenue deficit = Revenue expenditure − Revenue receipts
= 2,811 − 2,035 = ₹ 776 crores

(*b*) Fiscal deficit = Total expenditure − Revenue receipts (Recoveries of loans and other receipts)
= (2811 + 574) − 2,035 − 230
= 3,385 − 2,035 − 230 = ₹ 1,120 crores

(*c*) Primary deficit = Fiscal deficit − Interest payments
= 1,120 − 1,000 = ₹ 120 crores

Illustration 5. From the following data about a Government budget find out (*a*) Revenue deficit, (*b*) Fiscal deficit and (*c*) Primary deficit: (*Foreign 2011*)

Items	₹ (*Arab*)
1. Plan capital expenditure	120
2. Revenue expenditure`	100
3. Non-plan capital expenditure	80

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4. Revenue receipts	70
5. Capital receipts net of borrowing	140
6. Interest payments	30

Solution.

(*a*) Revenue deficit = 100 − 70 = ₹ 30 arab

(*b*) Fiscal deficit = [100 + 120 + 80] − [70 + 140] = ₹ 90 arab

(*c*) Primary deficit = 90 − 30 = ₹ 60 arab

Points to Remember

Government Budget

Budget is a financial statement showing the expected receipts and expenditures of the government in the coming financial year. In India, fiscal year runs from 1st April to 31st March of next year.

Objectives of Budgetary Policy

1. Re-distribution by income and wealth
2. Reallocation of resources
3. Economic stability
4. Managing Public Enterprises.

Components of a Budget

Two components of a budget are:

1. Revenue Budget
2. Capital Budget

Budget Revenue

Budget revenue are the funds of the government to finance its activities. The two main *components* of public revenue are:

1. **Revenue Receipts.** It includes tax revenue (like, tax on income and expenditures, taxes on property and capital transactions, taxes on commodities and services) and non-tax revenue (like currency, interest receipts, profits, etc.)
2. **Capital Receipts.** It includes market borrowings, external loans, recoveries of loans and advances made by the central government and provident funds.

Budget Expenditure

Budget expenditure is the expense which the government incurs for its own maintenance as also for the society and the economy as a whole. The main *component* of budget expenditure is: revenue expenditure and capital expenditure.

Balanced, Surplus and Deficit Budgets

1. In Balanced budget, revenue = expenditure.
2. In Deficit budget, revenue < expenditure.
3. In Surplus budget, revenue > expenditure.

Deficits in the Union Budget

Deficit means expenditure is more than the revenue. There are three main types of deficits, namely:

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1. Revenue deficit **2.** Fiscal deficit **3.** Primary deficit.

1. Revenue Deficit. Revenue deficit occurs when revenue expenditure is more than revenue receipts.
Revenue Deficit = Revenue Expenditure − Revenue Receipts

2. Fiscal Deficit. It is over and above budgetary deficit. It occurs when borrowings and other liabilities are added to the budgetary deficit. Its formula is:
Fiscal Deficit = Total Expenditure − Total Receipts other than Borrowing and other Liabilities.

3. Primary Deficit. It is equal to Fiscal Deficit reduced by Interest Payment
Primary Deficit = Fiscal Deficit − Interest Payments

Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. Define revenue deficit.
2. Define primary deficit. (*Delhi 2008, 2012*)
3. Define fiscal deficit. (*Delhi 2012; AI 2014*)
4. What is a government budget? (*Delhi 2009; AI 2007, 08, 12*)
5. Name two components of government budget.
6. What are revenue receipts (or revenue items) of government? Mention two sources of revenue receipts. (*Delhi 2009*)
7. What is a tax? (*Delhi 12, Foreign 2006*)
8. What are the non-tax revenue receipts? (*AI 2008*)
9. Why are the borrowings by the government termed as capital receipts? (*Delhi 2009*)
10. Explain the term revenue expenditure of the government. (*Delhi 2009*)
11. Define capital expenditure in a government budget. (*Foreign 2008; Delhi 2009*)
12. Define plan expenditure in a government budget. (*AI 2009*)
13. Define non-plan expenditure in a government budget. (*AI 2009*)
14. What is developmental expenditure in a government budget? (*Delhi 2005*; *AI 2009*)
15. Explain the term non-developmental expenditure of the government.
16. What is a balanced government budget. (*Delhi 2005, 07*)
17. What is budgetary deficit? (*AI 2006*)
***18.** In a government budget, revenue expenditure is ₹ 50,000 crores and receipts are ₹ 15,000 crores. How much is the revenue deficit? (*Delhi 2006*)
***19.** In a government budget, primary deficit is ₹ 10,000 crores and interest payment is ₹ 8,000 crores. How much is the fiscal deficit? (*Delhi 2006*)
20. What does zero primary deficit mean?
21. State any one objective of government budget. (*Delhi 2008*)
22. Why are taxes received by the government not capital receipts? (*AI 2009*)

*Please see the answer at the end of exercises.

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23. Why is income tax a direct tax? (*Foreign 2009*)
24. Why is primary deficit calculated? (*Delhi 2010*)
25. What is meant by revenue deficit? (*AI 2010*)
26. Give two examples of non-tax revenue. (*Foreign 2010*)
27. Define a direct tax. (*AI 2012*)
28. Define indirect tax. (*Foreign 2012*)
29. Give two examples of capital receipts in a government budget. (*AI 2012*)
30. Give two examples of indirect taxes. (*Delhi 2013*)
31. What is a Government Budget? (*Delhi 2013*)
32. What is revenue deficit? (*AI 2013*)
33. What is primary deficit? (*Foreign 2013*)
34. What is a direct tax? (*Foreign 2013*)
35. State two sources of non-tax revenue receipts (*Foreign 2013*)
36. What is an indirect tax? (*Foreign 2013*)
37. Define capital expenditure. (*Foreign 2013*)
38. Give one example each of direct tax and indirect tax. (*Foreign 2013*)
39. Define government budget. (*Delhi 2014*)
40. What is current account deficit' in the balance of payments? (*Delhi 2014*)
41. What is 'primary deficit'? (*Foreign 2014*)

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Multiple Choice Questions

1. Budget is placed before:
(*a*) Lok Sabha (*b*) Rajya Sabha
(*c*) Both Lok Sabha and Rajya Sabha (*d*) Parliament

2. Budget is a:
(*a*) Financial statement (*b*) Monetary statement
(*c*) Political statement (*d*) All of the above

3. Which article of the Constitution takes about the budget?
(*a*) Article 110 (*b*) Article 111 (*c*) Article 112 (*d*) Article 113

4. One year period from 1 April to 31 March of next year is called a:
(*a*) Monetary year (*b*) Fiscal year (*c*) Plan year (*d*) Tax year

5. Tax revenue may come from:
(*a*) Tax on income and expenditure (*b*) Tax on property and capital transactions
(*c*) Tax on goods and services (*d*) All of the above

6. Revenue expenditure may be on:
(*a*) Subsidies (*b*) Non-interest expenditure
(*c*) Interest expenditure (*d*) All of the above

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7. Capital receipts may come from:
(*a*) Market borrowings (*b*) Provident funds
(*c*) Recoveries of loans (*d*) All of the above

8. Direct tax can be:
(*a*) Gift tax (*b*) Wealth tax (*c*) Corporation tax (*d*) All of the above

9. Indirect tax can be:
(*a*) Excise duty (*b*) Entertainment tax (*c*) Tax on services (*d*) All of the above

10. Revenue expenditure may be:
(*a*) Salaries (*b*) Pensions (*c*) Grants (*d*) All of the above

Short Answer Type Questions **(*3/4 Marks*)**

1. Define a government budget. State its three objectives.
(*AI 2009; Foreign 2006, 08; Delhi 2006, 07, 08, 09*)

2. Explain the two components (revenue budget and capital budget) of government budget.
(*Delhi 2008*)

3. Distinguish between revenue receipts and capital receipts in a government budget. Give two examples of each. (*AI 2006, 07*; *Delhi 2007; Foreign 2007*)

4. Give the meaning of (*i*) tax revenue, and (*ii*) non-tax revenue. Give one example of each.
(*Foreign 2007*)

5. Explain the basis of classifying government expenditure into revenue expenditure and capital expenditure. Give two examples of each. (*AI 2008*; *Delhi 2006*)

6. Explain the terms 'development' and 'non-development' expenditures of government. Give two examples of each. (*Foreign 2007, 08*; *Delhi 2009*)

7. What are plan and non-plan expenditures in a government budget. Give an example of each.
(*Foreign 2008*)

8. Explain the meaning and implications of fiscal deficit.
(*AI 2008*; *Delhi 2006, 07, 08; Foreign 2009*)

9. Give meanings of capital receipts and revenue receipts with an example of each. (*Delhi 2008*)

10. Give meaning of capital expenditure and revenue expenditure in a government budget and an example of each. (*AI 2008*)

11. Distinguish between: (*AI 2008*)
(*i*) balanced budget and surplus budget
(*ii*) developmental expenditure and non-developmental expenditure.

12. Giving reasons, classify the following into direct tax and indirect tax: (*Delhi 2008*)
(*i*) Wealth tax (*ii*) Entertainment tax
(*iii*) Income tax

13. Explain the basis of classifying taxes into direct taxes and indirect taxes. (*AI 2008*)

14. Classify the following receipts into revenue receipts and capital receipts. Give reasons for your answer: (*AI 2008*)

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(*i*) Recovery of loans
(*ii*) Interest received on loans
(*iii*) Dividend received from public enterprises
(*iv*) Grants from foreign governments.

15. How can a government budget help in reducing inequalities of income? Explain (*Sample Paper 2009*)

16. Distinguish between: (*i*) Direct tax and indirect tax; (*ii*) Revenue deficit and fiscal deficit. (*Delhi 2009*)

17. Give the meaning of revenue deficit, fiscal deficit and primary deficit. (*AI, 2009; Delhi 2009*)

18. What are the implications of revenue deficit? State two measures to reduce this deficit. (*AI, Foreign 2009*)

19. How can a government budget help in reallocation of resources in an economy? Explain. (*Foreign 2009*)

20. Explain the meaning of revenue expenditure and capital expenditure. (*Foreign 2009*)

21. What is government budget? Give the meaning of: (*Sample Paper 2009*)

(*i*) Revenue deficit.
(*ii*) Fiscal deficit.

22. Categorise the following government receipts into revenue and capital receipts. Give reasons for your answer. (*Sample Paper 2009*)

(*i*) Receipts from sale of shares of a public sector undertaking.
(*ii*) Borrowings from public.
(*iii*) Profits of Public sector undertakings.
(*iv*) Income tax received by government.

23. What are the implications of a large revenue deficit? Give two measures to reduce this deficit. (*Sample Paper 2009*)

24. Give meanings of revenue expenditure and capital receipts in a government budget. Give one example of each. (*AI 2009*)

25. Give meanings of capital expenditure and revenue receipts in a government budget. Give one example of each. (*AI 2009*)

26. How can government budget be helpful in altering distribution of income in an economy? Explain. (*Delhi 2010*)

27. Distinguish between. (*Delhi 2010*)

(*i*) Capital receipts and revenue receipts.
(*ii*) Direct tax and indirect tax.

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28. Explain the allocation function of a government budget. (*AI 2010*)

29. Distinguish between:

(*i*) Capital expenditure and Revenue expenditure.

(*ii*) Fiscal deficit and Primary deficit. (*AI 2010*)

30. Explain the two components of the government budget. (*Foreign 2010*)

31. Explain with the help of suitable examples the basis of classifying taxes into direct and indirect taxes. (*Foreign 2010*)

32. Explain the objective of stability of prices of government budget. (*Foreign 2010*)

33. Explain the 'allocation of resources' objective of Government budget. (*Delhi, Foreign 2011*)

34. Explain the 'redistribution of income' objective of Government budget. (*Delhi, AI 2011*)

35. Explain the 'economic stability' objective of a Government budget. (*AI, Foreign 2011*)

36. From the following data about a Government budget find out (a) Revenue deficit, (b) Fiscal deficit and (c) Primary deficit: (*Delhi 2011*)

Items	(₹ *Arab*)
1. Capital receipts net of borrowings	95
2. Revenue expenditure	100
3. Interest payments	10
4. Revenue receipts	80
5. Capital expenditure	110

[*Ans.* (*a*) ₹ 20 arab (*b*) ₹ 35 arab (*c*) ₹ 25 arab]

37. Explain with the help of examples, the distinction between direct tax and indirect tax. (*Foreign 2011*)

38. Explain the role of government budget in allocation of resources. (*Delhi 2012*)

39. Explain the role of government budget in bringing economic stability. (*AI 2012*)

40. Explain the role of government budget in reducing income inequalities. (*Foreign 2012*)

41. Explain 'revenue deficit' in a government budget. What does it indicate? (*Delhi 2012*)

42. Explain the concept of 'fiscal deficit' in a government budget. What does it indicate? (*AI 2012*)

43. Explain the concept of 'primary deficit' in a government budget. What does it indicate? (*Foreign 2012*)

44. How can government budget be helpful in altering the income distribution? Explain. (*Delhi 2012*)

45. Explain the distinction between direct tax and indirect tax. Give one example of each. (*Delhi 2012*)

46. How can a government budget help in reallocation of resources? Explain. (*Delhi 2012*)

47. Distinguish between direct tax and indirect tax. Give one example of each. (*AI 2012*)

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48. Explain the 'price stability' function of a government budget. (*AI 2012*)

49. Explain the basis of classifying government expenditure into revenue and capital expenditures. (*AI 2012*)

50. Distinguish between revenue expenditure and capital expenditure in Government budget. Give an example of each.

or

Distinguish between revenue deficit and fiscal deficit. (*Delhi 2013*)

51. Distinguish between revenue receipts and capital receipts. Given an example of each. (*AI 2013*)

52. How can budgetary policy be used to reduce inequalities of income? (*AI 2013*)

53. State three sources each of revenue receipts and capital receipts in government budget. (*AI 2013*)

54. State three objectives of budgetary policy. (*Foreign 2013*)

55. Giving reason, state whether the following is a revenue expenditure or a capital expenditure in a government budget: (*Foreign 2014*)

(*i*) Expenditure on scholarships

(*ii*) Expenditure on building a bridge.

56. Is the following a revenue receipt or a capital receipt in the context of government budget and why? (*AI 2014*)

(*i*) Tax receipts

(*ii*) Disinvestment

Long Answer Type Questions **(*6 Marks*)**

1. Explain the main objectives of the Government budget.

2. What do you mean by budget expenditure? Explain its various components.

3. What is fiscal deficit? Explain its main implications.

4. What do you mean by tax? Why it is considered as revenue receipts? Give difference between direct and indirect taxes.

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Answers

Very Short Answer Type Questions

***18.** Revenue deficit = Revenue expenditure − Revenue Receipts = 50,000 − 15000 = ₹ 35000 crores.

***19.** Fiscal deficit = Primary deficit + Interest payments = 10,000 + 8000 = ₹ 18000 crores.

Multiple Choice Questions

1. (*c*) **2.** (*a*) **3.** (*c*) **4.** (*b*) **5.** (*d*) **6.** (*d*) **7.** (*d*) **8.** (*d*)
9. (*d*) **10.** (*d*)

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Annexure: Fiscal Policy

Fiscal Policy is a policy of public revenue and public expenditure and allied matter thereof. Its three basic objectives are to achieve:

(1) Equity (2) Growth (3) Stability

The fiscal policy plays an important role in the economic development of an economy.

1. Acceleration of Economic Growth
2. Increase in Employment Opportunities
3. Reduction in Inequalities of Income and Wealth
4. Maintain Price Stability.

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Value Based and Higher Order Thinking (HOT) Questions (*With Answers*)

Unit 8: Government Budget and the Economy

Q1. Are fiscal deficits necessarily inflationary?

Ans. Fiscal deficits are not necessarily inflationary. One of the main criticisms of deficits is that they are inflationary. This is because when government increases spending or cuts taxes, aggregate demand rises. Firms may not be able to produce more quantities that are being demanded at the ongoing prices. Prices will, therefore, have to rise. However, if there are unutilised resources, output is held back by lack of demand. A high fiscal deficit is accompanied by higher demand and greater output and, therefore, need not be inflationary.

Q2. Give the relationship between the revenue deficit and the fiscal deficit.

Ans. Fiscal deficit is always a wider concept than revenue deficit. Revenue deficit is defined as the excess of government's revenue expenditure over revenue receipts. In terms of formula:

Revenue Deficit = Revenue Expenditures (*RE*) − Revenue Receipts (*RR*).

In short, there will be revenue deficit in the government budget when revenue expenditure exceeds revenue receipts.

Fiscal Deficit = Revenue Deficit + Capital Deficit + Borrowings and other liabilities.

Fiscal deficit does not take into account all types of receipts. It does not take into account borrowings. As such, fiscal deficit is defined as the excess of all expenditure over total receipts net of borrowings.

Q3. From the budget estimates of Government of India for the year 2000–2001. Calculate: (*a*) Revenue deficit (*b*) Fiscal deficit and (*c*) Primary deficit:

Items	**₹ (*in crores*)**
(*a*) Revenue Receipts	2,035
(*b*) Revenue Expenditure	2,811
(*c*) Capital receipts	1,343
(*d*) Capital Expenditure	574
(*e*) Recoveries of loans and other receipts	230
(*f*) Borrowing and other liabilities	1,113
(*g*) Interest payments	1,000

Ans. (*a*) Revenue deficit = Revenue expenditure − Revenue receipts

= 2,811 − 2,035

= ₹ 776 crores

(*b*) Fiscal deficit = Total expenditure − Revenue receipts (Recoveries of loans and other receipts)

= 2811 + 574) − 2,035 − 230

= 3,385 − 2,035 − 230

= ₹ 1,120 crores

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(*c*) Primary deficit = Fiscal deficit − Interest payments
= 1,120 − 1,000 = ₹ 120 crores

Q4. Is balanced budget good for India?

Ans. *It is one when estimated revenues are equal to estimated expenditures.* In other words, amount of tax is equal to the amount of expenditure. This kind of budget leads to slight increase in aggregate demand. Balanced budget is a good policy which can bring an economy to a full employment equilibrium level. It brings about financial stability. But it is not good for a less developed country like India. In such a country, the government should have more expenditures (than revenue) which will raise aggregate demand.

Q5. Are the following included in revenue expenditure or capital expenditure and why?
(a) Subsidies
(b) Repayment of loan.

Ans. (*a*) Subsidies are included in revenue expenditure as it neither creates assets nor reduces liabilities.
(*b*) Repayment of loans is included in capital expenditure as it reduces liabilities of the government.

Q6. How can a government budget help in reducing inequalities of income? Explain.

Ans. One of the feature of government budget is to do allocation of resources, *i.e.*, priority must be given to social sectors. Government through its two important budgetary instruments of taxation and subsidies will allocate resources to those areas where society's welfare is maximum. In this way, it will bring about equitable distribution of income and wealth. Equitable distribution of income and wealth is a way to bring social justice.

Q7. Tax rates on higher income group have been increased. Which economic value does it reflect? Explain. (*AI 2014*)

Ans: If tax rates on higher income group are increased, then it will reduce inequalities of income as the difference between disposable income of higher income and lower income group will fall. The economic value it reflects is rise in **equity**.

Q8. Is the following a revenue expenditure or capital expenditure in the context of government budget? Give reason.
(*i*) Expenditure on collection of taxes
(*ii*) Expenditure on purchasing computers (*AI, Delhi 2014*)

Ans: (*i*) It is a revenue expenditure because it neither creates any asset nor reduces any liability.
(*ii*) It is a capital expenditure because it creates assets.

Q9. Government has started spending more on providing free services like education and health to the poor. Explain the economic value it reflects. (*Delhi 2014*)

Ans: It will reduce inequality of income. When poor people get free education and medical help, they will become productive resources for the country. Country's **production** level will rise (economic value). The income given to poor will raise their standard of living.

Q10. Government raises its expenditure on producing public goods. Which economic value does it reflect? Explain. (*Delhi 2014*)

Ans: Public goods are non-rival and non-excludable in consumption. Examples: Parks, pollution control, police, fire protection, etc. Their production generates benefits to the society. The welfare of the society rises as more public goods are made available to them.

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NCERT Textual Questions with Answers

Unit 8: Government Budget and the Economy

Q1. Explain why public goods must be provided by the government.

Ans. Public goods are those goods and services for which consumption by some individuals does not reduce the amount available to others. For example: parks, roads, water, bridges, national defence, etc. These goods are non-rival and non-excludable goods. People receive benefits from public goods but do not pay for them. Such a good can be produced only by government.

Q2. Distinguish between revenue expenditure and capital expenditure.

Ans. Government expenditure may be classified as revenue expenditure and the capital expenditure.

(*i*) Revenue expenditure is that expenditure of the government which does not result in creation of any asset or reduction in liability. It is financed out of revenue receipts. *Examples*: Expenditure on payment of salary, pension, interest, etc.

(*ii*) Capital expenditure is that expenditure which leads to creation of an asset or reduction in liabilities. That is, it is the expenditure on creation of assets. Such expenditure is financed out of borrowings from the public and foreign government bodies. *Examples*: Expenditure on construction of roads, bridges, canals, grant of loans, etc.

Q3. 'The fiscal deficit gives the borrowing requirement of the government'. Elucidate.

Ans. Fiscal deficit shows the borrowing requirements of the government during the budget year.

Fiscal deficit = Total Expenditure − Revenue receipts − Non-debt creating capital receipts

= Net borrowing at home + Borrowings from RBI + Borrowings from aborad.

It indicates the total borrowing requirements of the government from all sources. As the government borrowing increases, its liability in future to repay loans along with interest thereon also increases.

Q4. Give the relationship between the revenue deficit and the fiscal deficit.

Ans. Fiscal deficit is always a wider concept than revenue deficit. Revenue deficit is defined as the excess of government's revenue expenditure over revenue receipts. In terms of formula:

Revenue Deficit = Revenue Expenditures (*RE*) − Revenue Receipts (*RR*).

Fiscal deficit is defined as the excess of all expenditure over total receipts net of borrowings. It does not take into account borrowings.

Fiscal Deficit = Revenue Deficit + Capital Deficit + Borrowings and other liabilities.

Q5. Does public debt impose a burden? Explain.

Ans. Public debt is not always a blessing. Excessive use of it creates a lot of crisis in an economy. Such as:

1. **Hampers Economic Development of a Country.** Loans are easily borrowed but it is very difficult to repay them. Generally, government imposes more taxes. It brings instability and is an obstacle in the economic development of a country.

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2. **Poses Threat to Political Freedom.** Foreign loans and assistance leads to deep conflict among countries. The friction among countries challenges the political freedom.
3. **Proves a Burden on Common Man.** Loans taken for unproductive purposes, like war and armaments are a burden on common man in the form of higher taxes.
4. **Leads to Extravagant Spending.** Public debt leads to unplanned spending. This provides incentive to the government to implement those schemes which require excessive expenditure.
5. **Results in Drain of National Wealth.** Repayment of foreign loans results in drain of wealth out of the country.

Q6. Are fiscal deficits necessarily inflationary?

Ans. Fiscal deficits are not necessarily inflationary. One of the main criticisms of deficits is that they are inflationary. This is because when government increases spending or cuts taxes, aggregate demand rises. Firms may not be able to produce more quantities that are being demanded at the ongoing prices. Prices will, therefore, have to rise. However, if there are unutilised resources, output is held back by lack of demand. A high fiscal deficit is accompanied by higher demand and greater output and, therefore, need not be inflationary.

Q7. Discuss the issue of deficit reduction.

Ans. The deficit in a government budget can be reduced by the following steps:

(*i*) Taxes should be increased. Government can make a plan for raising direct taxes to increase its receipts. The government receipts can also be raised by increasing rates of taxes or by imposing new taxes.

(*ii*) Reduction in government expenditure. It can be done through making government activities more efficient through better planning of programmes and better administration.

(*iii*) The government can raise receipts through the sale of shares in PSUs (Public Sector Undertakings).

(*iv*) Changing the scope and role of government by withdrawing from some areas where it operated before.

(*v*) The government can encourage the private sector to undertake capital projects to reduce its expenditure.

❑❑

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Balance of Payments

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This Unit Contains

9. Foreign Exchange Rate
10. Balance of Payments

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Foreign Exchange Rate



Chapter Scheme

9.1 Introduction

9.2 Meaning of Foreign Exchange Rate

9.3 Types of Exchange Rate

- 9.3.1 Fixed Exchange Rate
- 9.3.2 Flexible Exchange Rate
- 9.3.3 Managed Floating

9.4 Determination of Foreign Exchange Rate in Free Market

- 9.4.1 Demand for Foreign Exchange
- 9.4.2 Supply of Foreign Exchange
- 9.4.3 Equilibrium Rate of Exchange
- 9.4.4 Depreciation and Appreciation of Currency
- Depreciation *vs.* Devaluation
- Appreciation *vs.* Revaluation

9.5 Foreign Exchange Market

- 9.5.1 Meaning of Foreign Exchange Market
- 9.5.2 Functions of Foreign Exchange Market
- 9.5.3 Operation of Foreign Exchange Market

- **Points to Remember**
- **Test Your Knowledge**
- **Answers to MCQs**
- **Annexure: Spot Market**

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9.1 INTRODUCTION

All open economies are economically interdependent. Different countries use different currencies as the medium of exchange. This has created problems in international trade as there is no universally accepted currency. Some of the problems are: how will importer make payments in foreign currency? What will be the rate of exchange of currencies of the two countries? Should the rate of exchange be fixed or flexible? The issues are related to foreign market, foreign exchange rate and the balance of payments.

9.2 MEANING OF FOREIGN EXCHANGE RATE

Foreign exchange rate refers to the rate at which one unit of currency of a country can be exchanged for the number of units of currency of another country.

Example: \$ 1 = ₹ 50 or ₹ 1 = $\frac{1}{50}$ Dollar or ₹ 1 = 2 Cents.

Foreign exchange rate is the price of a currency expressed in terms of another currency. Some economists refer to it as the ***external value of the currency.***

9.3 TYPES OF EXCHANGE RATE

Three main types of exchange rate systems are:

1. Fixed Exchange Rate System

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2. Flexible Exchange Rate System
3. Managed Floating.

9.3.1 Fixed Exchange Rate

Fixed rate of exchange refers to rate of exchange which is officially declared and is fixed by the government.

Merits of fixed exchange rate

1. It ensures **stability** in exchange rate. The exporters and importers do not have to operate under uncertainty about the exchange rate. Thus, it promotes foreign trade.
2. It promotes **capital movements.** Fixed exchange rate system attracts foreign capital because a stable currency does not involve any uncertainties about exchange rate that may cause capital loss.
3. Stable exchange rate **prevents capital outflow.**
4. It **prevents speculation** in foreign exchange market.
5. It force the government to keep **inflation in check.** In case of fixed exchange rate system, inflation causes balance of payments deficit resulting in depletion of foreign exchange reserves.

Demerits of fixed exchange rate

1. It contradicts the objective of having free markets.
2. Under this system, countries with deficits in balance of payment run down their stock of gold and foreign currencies. This can create serious problem for them. They may be forced to devalue their currency. On the other hand, countries with surplus in balance of payments will face the problem of inflation.
3. There may be undervaluation or overvaluation of currency. If the fixed exchange rate is at a level which is lower than the market level *i.e.*, at which demand for foreign currency far exceeds its supply, it will result in deficit in balance of payment. If it is higher than the market level, *i.e.* at which the supply exceeds demand then it may create inflationary pressure because of balance of payments surplus. It is difficult to fix a rate that may prove to be at equilibrium rate.

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9.3.2 Flexible Exchange Rate

Flexible rate of exchange is that rate which is determined by the demand for and supply of the currencies concerned in the foreign exchange market. That is,

$$R = f(D, S)$$

where, R = Exchange Rate

D = Demand for different currencies in the international market

S = Supply of different currencies in the international market

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The exchange rate at which demand for foreign currency is equal to its supply is called ***Par Rate of Exchange, Normal Rate or Equilibrium Rate.*** It is a flexible rate because it tends to change in accordance with changes in the supply of and demand for different currencies in the foreign exchange market.

Merits of flexible exchange rate

1. It eliminates the problem of overvaluation or undervaluation of currencies, deficit or surplus in balance of payments is automatically corrected under this system.
2. It frees the government from problem of balance of payments.
3. There is no need for the government to hold any reserves.
4. It enhances the efficiency in the economy by achieving optimum resource allocation.

Demerits of flexible exchange rate

1. It creates situations of instability and uncertainty. Wide fluctuations in exchange rate are possible. This hampers foreign trade and capital movements between countries.
2. It encourages speculation which may lead to larger uncertainties and fluctuations.
3. The uncertainty caused by currency fluctuations can discourage international trade and investment.

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Table 9.1 **Fixed versus Flexible Exchange Rate**

Fixed Exchange Rate	Flexible Exchange Rate
It is officially fixed in terms of gold or any other currency by government.	It is determined by forces of demand and supply of foreign exchange.
There is complete government control as only government has the power to change it.	There is no government intervention and it fluctuates freely according to market conditions.
The exchange rate generally remains stable. Only a small variation is possible.	The exchange rate keeps on changing.

9.3.3 Managed Floating

This is also a 'hybrid' system between fixed rate and flexible exchange rate systems. In Managed Floating system there is official declaration of rules or guidelines for intervention, no prefixed parity values and no announced times for variations. Authority intervenes if a particular situation in their judgement requires it.

In **dirty floating**, a particular country manipulates its managed float to the disadvantage of other countries.

9.4 DETERMINATION OF FOREIGN EXCHANGE RATE IN FREE MARKET

Flexible (or floating) exchange rate is that rate which is determined by the forces of demand and supply of foreign exchange. There is no official intervention. It is free to fluctuate according to changes in demand and supply of foreign currency.

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Flexible exchange rate is determined in the foreign exchange market by the interaction of the forces of demand for and supply of foreign exchange.

9.4.1 Demand for Foreign Exchange

The main **sources** of demand for foreign exchange are:

(*a*) To purchase goods and services from other countries by the domestic residents.
(*b*) To send gifts and grants to foreign countries (abroad).
(*c*) To speculate on the value of foreign currencies.
(*d*) To invest and purchase financial assets in some other country.
(*e*) To make payments of international loans.

There is an inverse relation between foreign exchange rate and demand for foreign exchange. *Higher the foreign exchange rate, the lower the demand for foreign exchange and lower the foreign exchange rate, higher the demand for foreign exchange.*

Suppose the price of US dollar in India falls from ₹ 50 to ₹ 40. It means that earlier Indian people have to pay ₹ 50 to buy one dollar worth of goods from USA. Now they have to pay ₹ 40 to buy one dollar worth of goods from USA. It **implies** that **American goods have become cheaper for Indian people.**

At a lower price of US dollar, India is ready to buy more goods from USA. This raises the demand for US dollars. So, lower the price of US dollars, higher is the demand for US dollars and vice versa.

Graphically, the demand curve of foreign exchange is downward sloping signifying the inverse relation between foreign exchange rate and demand for foreign exchange.

Fig. 9.1 shows that at exchange rate ₹ 60 per $, demand for foreign exchange is 20 million dollars. If exchange rate rises to ₹ 70 per $, then demand for foreign exchange falls to 10 million dollars. If Exchange rate falls to ₹ 50 per dollar, then demand for foreign exchange rises to 30 million dollars.

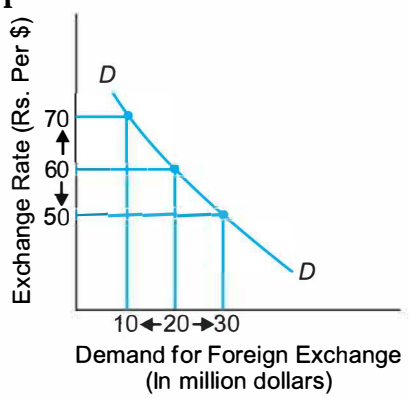


Fig. 9.1 Demand for Foreign Exchange

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9.4.2 Supply of Foreign Exchange

Supply of foreign exchange (or foreign currencies) in a particular country mainly comes from:

(*a*) Foreigner's purchasing domestic country's goods and services through exports.
(*b*) Direct foreign investment in the domestic country.
(*c*) Flow of foreign exchange due to speculative purchases by the non-residents in the domestic country.
(*d*) Remittances by the non-residents living abroad.

There is a direct relation between foreign exchange rate and supply of foreign exchange. *Higher the exchange rate, higher the supply of foreign exchange and lower the exchange rate, lower the supply of foreign exchange.*

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Let the price of US dollar in India falls from ₹ 50 to ₹ 40. It means that earlier, USA could buy ₹ 50 worth of goods from India by parting with one US dollar. But now it can buy only ₹ 40 worth of goods from India. **Indian goods have become costlier for USA. Thus, USA will buy less of Indian goods. This reduces the supply of US dollars to India. In other words, lower the foreign exchange, lower the supply of foreign exchange and vice versa.**

Graphically, the supply curve of foreign exchange is upward sloping signifying the direct relation between foreign exchange rate and supply of foreign exchange.

In Fig. 9.2, if exchange rate is ₹ 60 per dollar, supply of foreign exchange is 20 million dollars. If exchange rate rises to ₹ 70 per dollar supply of foreign exchange rises to 30 million dollars and if exchange rate falls to ₹ 50 per $ then supply of foreign exchange falls to 10 million dollars.

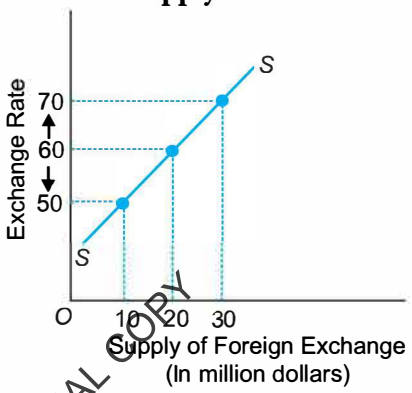


Fig. 9.2 Supply of Foreign Exchange

9.4.3 Equilibrium Rate of Exchange

The flexible exchange rate is determined at a point where the 'demand for' and 'supply of' foreign exchanges are equal, *i.e.*, demand for foreign exchange (say dollars) = supply of foreign exchange (say dollars). Fig. 9.3 illustrates determination of equilibrium exchange rate.

In the figure,

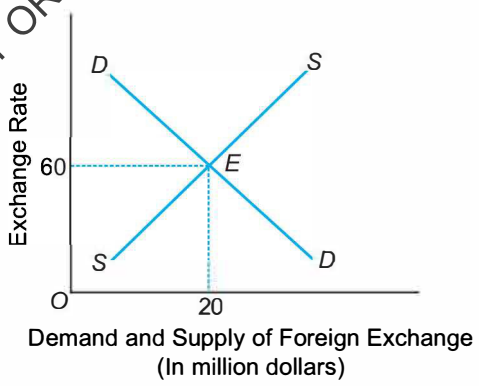


Fig. 9.3 Equilibrium of Flexible Exchange Rate

DD = The demand curve for foreign exchange. It is a composite demand. The demand curve is downward sloping showing inverse relationship between price of foreign exchange and demand for foreign exchange, that is, higher price of foreign exchange implies lower demand for foreign exchange. The reason for this relationship lies in the fact that **rise in the price of foreign exchange will raise the rupee cost of foreign goods. This will make foreign goods more expensive. Consequently, imports will reduce and demand for foreign exchange will fall.**

SS = This is the supply curve of foreign exchange. The supply curve is upward sloping showing direct relationship between exchange rate and supply of foreign exchange. That is, if exchange rate increases, the supply of foreign exchange also increases. It is because the rupee **is depreciating** in **value. This will make domestic country's goods cheaper to foreigners. The demand for our exports will rise. It implies more supply of foreign exchange.**

Point *E* = It is the point of equilibrium where demand and supply curves of foreign exchange intersect each other. It gives equilibrium exchange rate in the foreign

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exchange rate market for US dollar. It is called **Par Value of Exchange.** It shows that, when rate of exchange between US dollar and Indian rupee is 60, then demand for dollars is equal to supply of dollars. In equilibrium, 20 million dollars are exchanged for 1200 million rupees. This determines the foreign exchange rate as:

$ 1 = ₹ 60

At this dollar-rupee exchange rate, market is cleared, *i.e.,* total demand for dollars is equal to total supply of dollars is equal to $ 20 millions.

9.4.4 Depreciation and Appreciation of Domestic Currency

1. **Depreciation of Domestic currency. It occurs when there is a fall in the value of domestic currency in terms of another foreign currency.** If the demand for foreign exchange (say US dollars) increases, supply schedule remaining the same, the exchange rate will rise. **A rise in exchange rate implies appreciation of the US dollars (or depreciation of the Indian rupees).**

Currency depreciation is shown in Fig. 9.4, where:

D_1D_1 = It shows an increase in demand for US dollars in India. In this situation E_1 is the new equilibrium point. It gives the new foreign exchange rate as $1= ₹ 70.

E.g. from 1 US $ = ₹ 60 to 1 US $ = ₹ 70 means currency depreciation.

Increase in exchange rate implies that more rupees are needed to buy one US dollar. It means that Indian rupee is *depreciating*. In currency depreciation, domestic currency has become relatively less valuable. The foreign exchange market is cleared at $ 30 million.

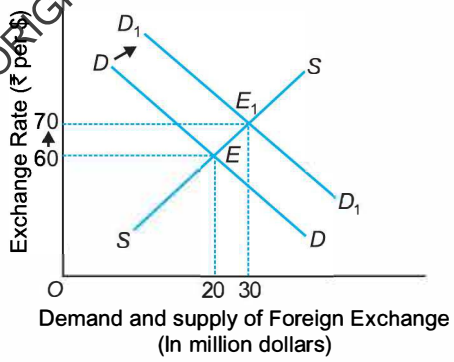


Fig. 9.4 Depreciation of Currency

Effects of Depreciation:

1. It means rise in the price of foreign currency or fall in the value of domestic currency.
2. Domestic currency becomes less valuable.
3. It will raise rupee cost of foreign goods.
4. Exports will rise.
5. Imports will fall.

Table 9.2 **Depreciation of Currency *vs.* Devaluation of Currency**

Depreciation of Currency	Devaluation of Currency
Differences	
1. It refers to fall in value of domestic currency in terms of another foreign currency due to change in market forces *i.e.*, demand and supply of currency.	1. When the government or monetary authority of a country officially lowers the value of domestic currency in terms of another foreign currency then it is called devaluation of a currency.

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2. It takes place under flexible exchange rate system.	2. It takes place under fixed exchange rate system.
3. It depends upon market forces *i.e.*, demand and supply of currency concerned under free market.	3. It depends upon government order/ policy issues.
Similarities	
1. Exports will rise and imports will fall.	1. Exports will rise and imports will fall.

2. Appreciation of Domestic Currency. It occurs when there is increase in the value of domestic currency in terms of another foreign currency. If the supply of foreign exchange (say US dollars) increases, demand schedule remaining the same, the exchange rate will fall. A **fall in the exchange rate implies appreciation of the Indian rupees (or depreciation of the US dollars.)**

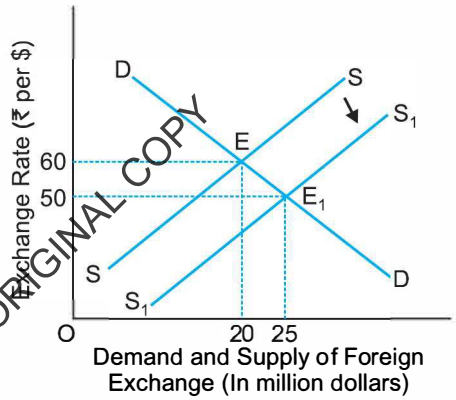


Fig. 9.5 Appreciation of Currency

Currency appreciation is shown in Fig. 9.5, where:

S_1S_1 = It shows an increase in supply of US dollars. It gives E_1 as the new equilibrium point. It gives the new foreign exchange rate as: $ 1 = ₹ 50

E.g. from 1 US $ = ₹ 60 to 1 US $ = ₹ 50 means currency appreciation.

The fall in exchange rate implies that less rupees are needed to buy one US dollar. It means that Indian rupee is *appreciating*. In currency appreciation, domestic currency has become relatively more valuable. The foreign exchange market is cleared at $ 25 million.

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Effects of Appreciation:

1. It mean fall in the price of foreign currency.
2. Domestic currency has becomes more valuable.
3. Exports will fall.
4. Imports will rise.

Table 9.3 **Appreciation of Currency *vs.* Revaluation of Currency**

Appreciation of Currency	Revaluation of Currency
Differences	
1. It means increase in the value of domestic currency in terms of another foreign currency.	1. When government or monetary authority of a country officially raises the value of its currency in terms of another foreign currency then it is called revaluation of domestic currency.

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2. It depends upon market forces *i.e.*, demand and supply of currency concerned under free market.	2. It depends upon government order.
3. It occurs in flexible exchange rate regime.	3. It takes place in fixed exchange rate regime.
Similarities	
1. Exports will fall and imports will rise	1. Exports will fall and imports will rise.

9.5 FOREIGN EXCHANGE MARKET

9.5.1 Meaning of Foreign Exchange Market

Foreign exchange market is defined as the market in which foreign currencies are bought and sold. Foreign exchange market is not a place but a system, where facilities are provided by foreign exchange brokers, banks, central banks etc. The buyers and sellers of foreign currency are central banks, commercial banks, brokers, exporters, importers, tourists, immigrants and investors. Central bank is the most important institution in foreign exchange market.

Today, foreign exchange market is having daily transactions crossing $ 100 billion. Most of the countries have foreign exchange market, *viz.*, New York, London, Paris, Frankfurt, Singapore, etc. Transactions in the foreign exchange market are reflected in the balance of payments account.

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9.5.2 Functions of Foreign Exchange Market

Major functions of foreign exchange market are:

(*a*) **International Transfer of Foreign Currency.** Foreign exchange market helps in transferring foreign currency from one country to another, where it is needed.

(*b*) **Provides Credit for Foreign Trade.** Foreign exchange market provides credit for foreign trade.

(*c*) **Hedging Foreign Exchange Risk.** Hedging means covering an exchange risk. It is done by forward foreign exchange transactions, through the banks. Foreign exchange market makes a contract to buy and/or sell foreign exchange against another currency in advance.

9.5.3 Operation of Foreign Exchange Market

There are two types of market for foreign exchange:

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1. Spot Market for Foreign Exchange

It occurs if the operation is of daily nature. It is also called *current* market. Spot rate of foreign exchange is useful for *current transactions.* It is important to calculate the strength of the domestic currency with respect to all the trading partners.

2. Forward Market for Foreign Exchange

The forward market for foreign exchange covers transactions which occur at a *future date.* Usually most international transactions occur much later, that is *beyond the value date when the transaction is signed.* Since transactions are contracted at one point of time and completed only at a later date. We should analyse the forward exchange rate. It helps both the parties involved to hedge against risk in exchange rate at a future date.

The forward market consists of parties that demand or supply a given currency at some further point in time. A forward contract is entered into for two reasons:

(1) To *minimise* risk of loss due to adverse changes in exchange rate or to make a profit. It is called **hedging.** It means risk management. It refers to steps taken to guard against the risk of change in exchange rate in the near future.

(2) To earn profit. It is called **speculation.**

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Solved Statement Questions on Foreign Exchange.

Statement 1. Foreign exchange rate in India is on the rise recently. What impact is it lkely to have on exports and how? (*AI 2014*)

Solution.

When foreign exchange rate rises, it means one unit of foreign currency can now buy more goods and servies from India. It makes Indian exports cheaper to the foreign buyers. Exports rises.

Statement 2. Visits to foreign countries for sightseeing etc, by the people of India is on the rise. What will be its likely impact on foreign exchange rate and how? (*Delhi 2014*)

Solution.

When people go abroad, they demand foreign currency. Demand for foreign exchange will rise. As a result exchange rate will rise.

Statement 3. Explain the effect of appreciation of domestic currency on exports. (*AI 2014*)

Solution.

Appreciation of domestic currency means fall in the price of foreign currency in term of domestic currency. Fall in exchange rate means exports are becoming costlier for foreign buyers. It will reduce demand for exports.

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Statement 4. Recently Government of India has doubled the import duty on gold. What impact is it likely to have on foreign exchange rate and how? (*Delhi 2014*)

Solution.

Increasing import duty on gold will make imports of gold costly. Imports of gold will fall. The demand for foreign exchange will fall. The demand curve will shift leftward. Thus, foreign exchange rate will fall.

Statement 5. How does giving incentives for exports influence foreign exchange rate? Explain. (*AI 2014*)

Solution.

Giving incentives for exports will increase exports. It will bring more foreign exchange into the country. Supply of foreign exchange will shift rightward. As a result, exchange rate will fall.

Points to Remember

Different countries have different currencies as the medium of exchange. This has created problems in international trade for there is no universally accepted currency.

Foreign Exchange Rate

Foreign exchange rate refers to the rate at which the currency of one country is exchanged with the currency of another country. In other words, exchange rate is the price of one currency expressed in terms of another currency. For example, if ₹ 50 are to be paid to buy one US dollar then exchange rate between the two currencies is $ 1 = ₹ 50.

There are two types of foreign exchange rate: (*i*) Fixed Exchange Rate and (*ii*) Flexible Exchange Rate.

(*i*) Fixed exchange rate. It is that rate which is officially fixed in terms of gold or any other currency by the government. Such a rate does not vary with changes in demand and supply of foreign currency. Only the government has the power to change it.

(*ii*) Flexible exchange rate. It is determined in the foreign exchange market by the interaction of the forces of demand for and supply of foreign exchange.

Demand and supply of Foreign Exchange

(*a*) Foreign exchange is demanded by (*i*) domestic residents to purchase goods and services from other countries. (*ii*) for sending gifts and grants to foreign countries (abroad), (*iii*) by the domestic residents to purchase financial assets in a particular country and (*iv*) to make payments of international trade. The demand curve for foreign exchange is downward sloping.

(*b*) The supply of foreign exchange comes from (*i*) the foreigners purchasing home country's goods and services through exports, (*ii*) the foreigners who invest in home country through

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joint ventures or through financial market operations and (*iii*) foreign currencies flow into the economy due to currency dealers and speculators. The supply curve of foreign exchange is upward sloping

(*c*) The equilibrium exchange rate is determined at a point where the demand for and supply of foreign exchange are equal.

Depreciation and Appreciation of Domestic currency.

In currency depreciation, there is a fall in the value of domestic currency in terms of foreign currency. In currency appreciation there is a rise in the value of domestic currency in terms of foreign currency.

Devaluation of Currency and Revaluation of Currency

Devaluation of currency. When government or monetary authority of a country officially lowers the value of domestic currency in terms of another foreign currency then it is called devaluation of currency.

Revaluation of Currency. When government or monetary authority of a country officially raises the value of its currency in terms of another foreign currency then it is called revaluation of currency.

Foreign Exchange Market

Foreign Exchange Market is a system in which foreign currencies are bought and sold.

Buyers and sellers are: 1. Central banks. 2. Commercial banks. 3. Brokers. 4. Exporters and importers. 5. Tourists. 6. Immigrants. 7. Investors.

Functions of Foreign Exchange Market

Major functions are: 1. International transfer of foreign currency. 2. Provides credit for foreign trade. 3. Hedging foreign exchange rate.

Operation of Foreign Exchange Market

Foreign exchange market are of two types:

(*a*) Spot Market. It is useful for current transactions.

(*b*) Forward Market. It is useful for future transactions.

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Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. Define par value of exchange.

2. Define foreign exchange. (*Delhi, AI 2009*)

3. What is meant by foreign exchange rate? (*Sample Paper 2009*)

4. What does a change from $3 = £1 to $2 = £1 show?

5. What does a change from $3 = £1 to $5 = £1 show?

6. Define fixed exchange rate system. (*AI 2008, 09; Delhi 09*)

7. Define flexible exchange rate system. (*Delhi 2008; AI 2009*)

8. State two sources of supply of foreign exchange. (*Sample Paper 2009*)

9. Give two merits of fixed exchange rate.

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10. Give meaning of equilibrium foreign exchange rate. (*Foreign 2008*)

***11.** The price of 1 US Dollar has fallen from ₹ 50 to ₹ 48. Has the Indian currency appreciated or depreciated? (*Sample Paper 2009*)

12. State two sources of supply of foreign exchange. (*Delhi 2010*)

13. Give the meaning of foreign exchange rate. (*Foreign 2010*)

14. Define foreign exchange rate. (*Delhi 2011*)

15. What is foreign exchange? (*AI 2011*)

16. Give meaning of managed floating exchange rate. (*Delhi 2012*)

17. What is a fixed exchange rate? (*AI 2012*)

18. What is a flexible exchange rate? (*Foreign 2012*)

19. How can increase in foreign direct investment affect the price of foreign exchange? (*Delhi 2013*)

20. The country needs a huge amount of imports for developmental programmes. Name one step which the central bank can take to make imports cheaper using the foreign exchange market. (*Foreign 2013*)

21. Define foreign exchange rate. (*AI 2014*)

22. What is 'devaluation'? (*AI 2014*)

23. What is floating exchange rate? (*AI 2014*)

***24.** What is 'managed floating exchange rate'? (*AI 2014*)

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Multiple Choice Questions

1. Foreign exchange is demanded by :
- (*a*) domestic residents to purchase goods and services from other countries
- (*b*) for sending gifts and grants to foreign countries (abroad)
- (*c*) by the domestic residents to purchase financial assets in a particular country
- (*d*) All of the above

2. The supply of foreign exchange comes from:
- (*a*) the foreigners purchasing home country's goods and services through exports
- (*b*) the foreigners who invest in home country through joint ventures or through financial market operations
- (*c*) currency dealers and speculators.
- (*d*) All of the above

3. In currency depreciation, there is:
- (*a*) Fall in the value of domestic currency in terms of foreign currency
- (*b*) No change in the value of domestic currency in terms of foreign currency
- (*c*) Rise in the value of domestic currency in terms of foreign currency
- (*d*) None of the above

4. Buyers and sellers of foreign exchange are:
(*a*) Central banks (*b*) Commercial banks (*c*) Brokers (*d*) All of the above

*Please see the answer at the end of exercises.

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5. Major functions of foreign exchange market are:
(*a*) International transfer of foreign currency. (*b*) Providing credit for foreign trade
(*c*) Hedging foreign exchange rate (*d*) All of the above

Short Answer Type Questions **(*3/4 Marks*)**

1. Explain the meaning and two merits and two demerits of fixed foreign exchange rate. (*Delhi, Foreign 2009*)

2. Explain the main demertis of fixed exchange rate.

3. Explain the main merits of flexible exchange rate.

4. Explain the main demerits of flexible exchange rate.

5. State the main sources of supply of foreign exchange.

6. Explain the relation between foreign exchange rate and demand for foreign exchange. (*AI 2007, 2008; Delhi 2009*)

7. Mention four sources each of demand and supplies of foreign exchange. (*AI 2009*; *Delhi 2007, 2009*)

8. Explain the direct relation between foreign exchange rate direct and supply of foreign exchange. (*Delhi 2007*, *AI 2009*)

or

Give the meaning of foreign exchange rate. Explain any two sources of supply of it. (*Foreign 2006*, *2008,09*)

or

When exchange rate of foreign currency rises, its supply rises. How? Explain. (*Delhi 2008*)

or

Give two reasons for a fall in supply of a foreign currency when its price in terms of domestic currency falls. (*Delhi 2008*; *AI 2008*)

9. Explain two merits each of flexible foreign exchange rate and fixed foreign exchange rate. (*AI 2009*)

10. Distinguish between fixed and flexible exchange rates. (*Foreign 2009*)

11. Explain the effect of appreciation of domestic currency on imports. (*Sample Paper 2009*)

12. Explain the effect of depreciation of domestic currency on exports. (*Sample Paper 2009*)

13. Distinguish between devaluation and depreciation of domestic currency. (*Delhi 2010*)

14. Giving two examples, explain why there is a rise in demand for a foreign currency when its price falls. (*AI 2010*)

15. Distinguish between fixed and flexible foreign exchange rate. (*Foreign 2010*)

16. When price of a foreign currency rises, its demand falls. Explain why. (*Delhi 2011*)

17. When price of a foreign currency rises, its supply also rises. Explain why. (*Delhi, Foreign 2011*)

18. When price of a foreign currency falls, the demand for that foreign currency rises. Explain, why. (*AI 2011*)

19. When price of a foreign currency falls, the supply of that foreign currency also falls. Explain, why. (*AI 2011*)

20. When price of a foreign currency falls, its demand rises. Explain, why. (*Foreign 2011*)

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21. Explain the effect of a fall in the price of foreign currency on exports. (*Delhi 2012*)
22. Explain the effect of a rise in the price of foreign currency on exports. (*Delhi 2012*)
23. Explain the effect of a fall in the price of foreign currency on imports. (*Delhi 2012*)
24. Explain the effect of rise in price of foreign currency on exports. (*AI 2012*)
25. Explain why there is an increase in demand for foreign currency when its price falls. (*AI 2012*)
26. Explain the effect of appreciation of domestic currency on imports. (*Delhi 2013*)
27. Explain the effect of depreciation of domestic currency on exports. (*AI 2013*)
28. How is exchange rate determined in the foreign exchange market? (*AI 2013*)
29. Explain any three sources of demand for foreign currency. (*Foreign 2013*)
30. Explain the reason for inverse relationship between price of a foreign currency and its demand. (*Foreign 2013*)
31. How are exports affected by depreciation of foreign currency? Explain. (*Foreign 2013*)
32. When foreign exchange rate in a country is on the rise, what impact is it likely to have on imports and how? (*AI 2014*)
33. What are non-monetary exchanges? Give an example. Explain their impact on use of gross domestic product as an index of welfare of the people (*Foreign 2014*)
34. What is depreciation of Rupee? What is its likely impact on Indian imports and how? (*Foreign 2014*)

Long Answer Type Questions **(*6 Marks*)**

1. Give difference between fixed and flexible exchange rates.
2. Explain the determination of equilibrium rate of exchange.
3. What do you mean by foreign exchange market? What are its functions? How does it operate in spot and forward markets?
4. Give the meaning of 'foreign exchange' and 'foreign exchange rate'. Giving reason, explain the relation between foreign exchange rate and demand for foreign exchange. (*AI 2012*)
5. Give two sources each of demand and supply of foreign exchange. Giving reason explain the relation between foreign exchange rate and supply of foreign exchange. (*Foreign 2012*)

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Answers

Very Short Answer Type Questions

***11.** When 1 US $ = ₹ 50, Fall to 1 US $ = ₹ 48 it means appreciation of Indian rupees.
***24.** It is flexible exchange rate which can be moderated by the intervention of the central bank through buying and selling of foreign currencies in the open market.

Multiple Choice Questions

1. (*d*) **2.** (*d*) **3.** (*a*) **4.** (*d*) **5.** (*d*)

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Annexure: Spot Market

1. Nominal Effective Exchange Rate (*NEER*)

The measure of average relative strength of a given currency is called the Effective Exchange Rate (*EER*). Since the effect of price changes is not removed it is also called as Nominal Effective Exchange Rate (*NEER*).

If the domestic country, India, has '*n*' trading partners then:

$$NEER = \sum_{i=1}^{n} (R^{i}_{index})(W_i)$$

where, i^{th} trading partner be USA

R^i = Exchange rate in Rupees/$

R^i_a = Exchange rate in year '*a*'

R^i_b = Exchange rate in base year '*b*'

$R^i_{index} = \frac{R^i_a}{R^i_b}$ for the year '*b*'

W^i = Ratio of trade volume with i^{th} partner to total trade volume of domestic country

$$W_i = \frac{X_i + M_i}{X_{total} + M_{total}}$$

where, X_i = Exports to i^{th} partner

M_i = Imports from i^{th} partner

X_{total} = Total exports of domestic country

M_{total} = Total imports of domestic country.

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2. Real Exchange Rate (*RER*)

It is a measure that eliminates the effect of price changes. That is, exchange rate is based upon constant prices.

In the year '*a*' for the partner '*i*':

$$R^i_{index} = R^i_a \frac{\text{[Price Index in country '}i\text{' in year 'a' with base year as '}b\text{']}}{\text{[Price Index in India in year '}a\text{' with base year as '}b\text{']}}$$

3. Real Effective Exchange Rate (*REER*)

It calculates effective exchange rate based on real exchange rates instead of nominal rates.

For '*n*' trading partners:

$$REER = \sum_{i=1}^{n} (RER^i_{index})\,(W_i)$$

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Calculation on exchange rate appreciation or depreciation should be made with reference to *REER* and not solely upon *NEER*.

4. Purchasing Power Parity (*PPP*)

(*a*) Absolute Purchasing Power Parity. It states that commodities tend to have the same price worldwide when measured in the same currency. There is no empirical support to this line of argument.

(*b*) Relative Purchasing Power Parity. It relates to change in the exchange rate to the rates of inflation in the two countries.

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Balance of Payments



Chapter Scheme

10.1 Introduction
10.2 Balance of Trade (*BOT*)
- 10.2.1 Meaning of *BOT*
- 10.2.2 Types of *BOT*

10.3 Balance of Payments (*BOP*)
- 10.3.1 Meaning of *BOP*
- 10.3.2 Features of *BOP*
- 10.3.3 Economic Transactions in *BOP*

10.4 Difference Between *BOP* and *BOT*
10.5 Current Account and Capital Account of *BOP*
- 10.5.1 Current Account
- 10.5.2 Capital Account
- 10.5.3 Overall Balance

10.6 Structure of *BOP*
10.7 Autonomous and Accommodating Items
- Solved Numerical Problems
- Points to Remember
- Test Your Knowledge
- Answers to MCQs

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10.1 INTRODUCTION

Three important concepts that are widely used in international trade are:

1. Balance of Trade (*BOT*)
2. Balance of Invisibles
3. Balance of Payments (*BOP*)

10.2 BALANCE OF TRADE (*BOT*)

10.2.1 Meaning of *BOT*

BOT is merchandise balance. **It shows visible trade transactions with the rest of the world during a year.** It refers to the difference in the value of imports and exports of goods.

$$BOT = V_X - V_M$$

where, V_X = Value of goods exported

V_M = Value of goods imported

If the value of export of goods is more than the value of import of goods then it is called *favourable BOT* and vice versa. It is a narrower concept as compared to *BOP*. In the world of growing capital transactions and payment of services across nations, the concept of *BOT* has little relevance.

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10.2.2 Types of *BOT*

Balance of trade may be of three types:

1. **Favourable Balance of Trade.** A country may have favourable balance of trade when the total value of the goods exported by it exceeds the total value of the goods imported by it. It is also called **surplus** in *BOT*.
2. **Unfavourable Balance of Trade.** A country may have unfavourable balance of trade when the total value of the goods imported is above the total value of the goods exported by it. It is also called **deficit** in *BOT*.
3. **Equilibrium in Balance of Trade.** A country may have equilibrium in balance of trade when the total value of the goods exported by it is equal to the total value of the goods imported by it. It is also called **balanced** balance of trade.

10.3 BALANCE OF PAYMENTS (*BOP*)

10.3.1 Meaning of *BOP*

BOP is a systematic record of a country's external economic transactions over a period of one year. It is an account of what the residents of a country receive from the rest of the world in a particular year on account of sale of **goods, services** and other **invisible items** as well as on account of **capital transfers** from the other countries, and also what these residents have paid out to the other countries on account of purchase of all these items and the transfer of capital from this country to the rest-of-the-world. In other words, ***BOP* is an accounting statement that provides a systematic record of all economic transactions between the residents of a country and the rest-of-the-world in a given period of time, usually one year.** 'Systematic record' refers to double entry book-keeping system. 'Economic transactions' include all such transactions that involve the transfer of title or ownership of goods, services, money and assets. The term 'residents' mean the nationals of the reporting country. They exclude diplomatic staff, tourists, foreign military personnel, migratory workers and branches of the foreign companies, even though they stay in the reporting country.

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10.3.2 Features of *BOP*

Main features of balance of payments are as under:

(*a*) Systematic Record. It refers to systematic record of receipts and payments of a country with other countries.

(*b*) Fixed Period of Time. Fixed period of time is a statement of account for a given period of time, generally one year.

(*c*) Comprehensiveness. Comprehensiveness comprises of all the three items, *i.e.* visible, invisible and capital transfers.

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(*d*) **Double Entry System.** In double entry system both receipts and payments are recorded.

(*e*) **Balanced System.** Double entry system keeps debit and credit sides of accounts in balance.

10.3.3 Economic Transactions in *BOP*

Economic transactions in *BOP* are categorised into:

(*a*) **Visible items.** It includes all types of physical goods exported/imported. These are visible as these are made of some matter or material.

(*b*) **Invisible items.** It includes all types of services, investment income and unilateral transfers. Services include shipping, banking, insurance travel services, consultancy services. Investment income includes interest, profit, divided and royalties.

(c) **Unilateral transfers.** It is one sided transactions. It is received without providing any good or service in return. It includes gifts, grants, donations, remmittances, indemnities, etc. It comprises all receipts (as credit) and payments (as debit) between residents and non-residents during an accounting year. It includes all unilateral transfers on both levels official (*i.e.*, government) and private transfers.

(*d*) **Capital transfers.** These are concerned with capital receipts and capital payments.

10.4 DIFFERENCE BETWEEN *BOP* AND *BOT*

A country normally records its international transactions in order to know its international economic position and to take policy decisions regarding monetary and fiscal systems on one hand and trade and payments on the other. These transactions are recorded in *BOT* and *BOP* statements.

Table 10.1 summarises the difference between balance of trade and balance of payments.

Table 10.1 **Difference between Balance of Trade and Balance of Payments**

Balance of Trade (BOT)	Balance of Payments (BOP)
1. Balance of Trade refers to difference between amounts of exports and imports of visible items.	1. It is an accounting statement that provides a systematic record of all economic transactions, between residents of a country and rest of the world in a given period of time.
2. BOT includes only visible items.	2. BOP includes visible items, invisible items, unilateral transfers and capital transfers.
3. It does not record any transaction of capital nature.	3. It records all transactions of capital nature.
4. It is a narrower concept as it is only a part of BOP account.	4. It is a wider concept and it includes BOT.

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5. Unfavourable BOT can be met out of favourable BOP.	5. Unfavourable BOP cannot be met out of favourable BOT.

10.5 CURRENT ACCOUNT AND CAPITAL ACCOUNT OF *BOP*

BOP account is divided into two accounts—**current account and capital account.** The current account of *BOP* records transactions relating to exchange of goods and services and unilateral transfers. The capital account records transactions representing foreign financial assets and liabilities. Current transactions bring about a change in the current level of a country's national income, whereas capital transactions bring about a change in the capital stock of a country. Current transactions are of flow nature whereas capital transactions are generally of stock nature.

10.5.1 Current Account

Current account is that account which records imports and exports of goods, services and unilateral transfers.

It includes record of:

(*a*) Export and Import of Goods. Current account shows export and import of visible items like wheat, rice, machine, etc.

(*b*) Export and Import of Services/Invisibles. The main services that are made use of in the international trade are shipping, insurance and banking services.

(*i*) Shipping, Insurance and Banking Services. Ships have to be hired for transporting goods from one country to another. The merchandise carried by the ships has to be insured for any loss and damage in transit. Banking services are used to facilitate receipts from and payments to foreign dealers. When foreign ships (*e.g.,* ships from some company in Japan) are hired by a country (say India) to bring the goods imported from Japan then, apart from payment for import of goods, payment has also to be made to Japanese shipping company in foreign currency. And if goods are insured with Japanese companies and payments are routed through Japanese banks, insurance and banking charges will also have to be paid. If foreign countries hire Indian ships and use services of Indian insurance companies and banks, India will receive foreign currency. India may receive payments in foreign currency as 'port charges' if foreign ships are anchored in Indian ports, and make payments when our ships drop anchor in foreign ports.

(*ii*) Investment Income. When foreign companies make investment in India's industry and trade, the profit made by them in India have to be paid to their shareholders in the form of dividend. Similarly, interest has to be paid to foreign creditors for money borrowed in the past. Thus, dividend and interest flow out of the country and involve payment in foreign currency. In the same way, India may receive dividend and interest payments from the rest-of-the-world for investments made and loans given by Indian companies and institutions.

(*iii*) Foreign Travel. Tourism and travel among the countries has become an important item on balance of payments. When foreign tourists come to India, they bring in foreign currency with them and convert it into our currency to spend it in our

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domestic market. The country receives foreign currency. Similarly, when Indian tourists go abroad, they have to convert Indian currency into foreign currency to spend it abroad. This involves an outflow or payment of foreign exchange. People travelling abroad for education, business or medical treatment make payments in foreign currency, while the foreigners coming to India are a source of receipts of foreign exchange.

(*iv*) Miscellaneous. It includes all residual transactions of the current account such as royalties, management fees, subscription to journals, consultancy, telephone and telegraph services, etc.

(*c*) Transfer Payments or unilateral or unrequited transfers. These are unrequited transfers or unilateral transfers between residents and non-residents. These can be private which include gifts, donations, etc., or official which include donations, grants in cash by foreign governments, contribution from UN, WHO, etc.

The net balance of visible trade, *i.e.* export minus import of goods is called **trade balance**. If exports are more than imports, then there is trade surplus. If imports are more than exports, there is trade deficit. The sum of 'net visible' and 'net invisible' gives **current account balance,** which can show surplus or deficit. The current account balance is transferred to the capital account.

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10.5.2 Capital Account

Capital account records capital transfer such as loans and investment between one country and the rest of the world which causes a change in the asset or liability status of the residents of a country or its government.

It includes private capital, banking capital, official capital, gold and foreign capital.

(*a*) Private Capital. In this only resident's capital transactions are included. It can be long-term or short-term capital. Long-term capital inlcudes direct investment in shares, real estate, bonds, long-term loans, etc., whereas short-term capital inlcudes short-term loans and repayment with their original maturity of one year or less. *Example.* Investment by an individual of one country to another country.

(*b*) Banking Capital. It includes foreign financial assets and liabilities of the government and the central bank receipts of repurchases from IMF.

(*c*) Official Capital. It is divided into:

(*i*) *Loan.* It includes credit granted by foreign governments and international institutions to central and state governments.

(*ii*) *Amortisations of capital.* It means purchase and resale of securities sold to the foreigners.

(*iii*) *Miscellaneous errors and omissions.* These indicate understatement or overstatement of receipts and payments. At times data may be incomplete or inaccurate (*i.e.* errors) or one side of transactions may escape recording (*i.e.* omissions).

(*d*) Gold and Foreign Capital. These are essential for stabilising the foreign exchange rate of the home currency. This reserve keeps changing depending on the net balance of other transactions.

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The net balance of capital account shows a country's **overall balance** of *payments positions*. The capital account balance may show **surplus** or **deficit**.

10.5.3 Overall Balance

The overall balance is obtained by adding current account balance and capital account balance. The overall balance needs to be cleared at the end of an accounting year.

Generally, it is felt that balance of payments of a country always remain in balance. This balance can be understood in two ways:

1. Balance of Payments in an Accounting Sense
2. Balance of Payments in an Operational Sense

1. **Balance of Payments in an Accounting Sense.** In an accounting sense, balance of payments of a country will always be balance because receipts and payments accounts are prepared on the basis of double entry system. Under the system, receipts side is always equal to payments side. Thus, balance of payments always balances.
2. **Balance of Payments in an Operational Sense.** In an operational sense, balance of payments is in **economic balance,** *i.e.,* if there is an overall *BOP* deficit, it is financed by drawing down of foreign reserve, drawing from IMF (International Monetary Fund) or sale of gold. If there is a surplus in balance of payment, it leads to an increase in foreign reserve, purchase of gold, etc.

Importance Note: Reserve change is shown after overall balance.

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10.6 STRUCTURE OF *BOP*

The *BOP* of a country includes five major accounts. They are:

Category I. **Goods and Services Account**

Debits (–)	Credits (+)
A. Imports of goods	*A.* Exports of goods
B. Imports of services	*B.* Exports of services

Category II. **Unilateral Transfers Account**

Debits (–)	Credits (+)
Unilateral transfers (gifts) made	Unilateral transfers (gifts) received

Category III. **Long-term Capital Account**

Debits (–)	Credits (+)
A. Increase in long-term foreign assets owned by home country private citizens and governments.	*A.* Decrease in long-term foreign assets owned by home country citizens and government.
B. Decrease in long-term home country assets owned by foreign private citizens and government.	*B.* Increase in short-term home country assets owned by foreign private citizens and governments.

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Category IV. **Short-term Private Capital Account**

Debits (–)	Credits (+)
A. Increase in short-term foreign assets owned by home country private citizens.	*A.* Decrease in short-term foreign assets owned by home country private citizens.
B. Decrease in short-term home country assets owned by foreign private citizens.	*B.* Increase in short-term home country assets owned by foreign private citizens.

Category V. **Short-term Official Capital Account**

Debits (–)	Credits (+)
A. Increase in short-term foreign assets owned by home country government (official monetary authorities).	*A.* Decrease in short-term foreign assets owned by home country government (officials monetary authorities).
B. Decrease in long-term home country assets owned by foreign governments (official monetary authorities).	*B.* Increase in short-term home country assets owned by foreign governments (official monetary authorities).

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Q. What are credit item and debit item?

Ans. In *BOP* account transactions are recorded as credits and debits according to the following simple rule: Any transaction that brings in foreign exchange for a country is a credit item and any transaction that causes a country to lose foreign exchange is a debit item. For example, exports is a credit item because it brings in foreign exchange and imports is a debit item because it leads to outflow of foreign exchange. On the same basis, borrowing from the rest of the world is a credit item and lending to the rest of the world is a debit item.

10.7 AUTONOMOUS AND ACCOMMODATING ITEMS

Autonomous items in the *BOP*. These refer to international economic transactions in the current and capital account that are undertaken for profit. They are independent of all other transactions in the BOP. These transactions are not influenced by the foreign exchange position of the country. For example: Exports, Imports.

Accommodating items in the *BOPs*. These refer to all transactions that occur because of other activity in the *BOP*, such as government financing. They are undertaken to cover deficit or surplus in the autonomous transactions. Thus, their magnitude is determined by the autonomous transactions.

Table 10.2 gives the difference between Autonomous and Accommodating items, which are often used in discussion of various types of balances of *BOP* account.

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Table 10.2 **Difference between Autonomous and Accommodating Items**

Autonomous Items	Accommodating Items
1. These refer to international economic transactions that take place due to economic motive like profit maximisation. These transactions are independent of the state of the country' s balance of payments.	1. These refer to transactions that occur because of other activity in the *BOP*, such as government financing.
2. These items are often called above the lines items in the *BOP*.	2. These items are also referred to as below the line items in the *BOP*.
3. The balance of payments is in **deficit** if the autonomous receipts are less than autonomous payments. This means that the foreign country has some net claims against the domestic country and vice versa.	3. They are compensating short-term capital transactions which are meant to correct a disequilibrium in the autonomous items of a balance of payments.
4. The monetary authorities may finance a deficit by depleting their reserves of foreign currencies, or by borrowing from the IMF or by borrowing from foreign monetary authorities. This will be shown as decrease in reserves.	4. Overall deficit or surplus in *BOP* results in the accommodating capital transactions which remove the surplus or deficit and the balance of payments account balances.

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SOLVED NUMERICAL PROBLEMS

Illustration 1. Let *BOT* be ₹ 1,000 crores and the value of imports be ₹ 700 crores. Calculate the value of exports.

Solution.

BOT = Value of Exports − Value of Imports

1,000 = Value of Exports − 700

∴ Value of Exports = ₹ 1700 crores

Illustration 2. Let deficit in *BOT* be ₹ (−) 1,000 crores. The value of exports be ₹ 300 crores. Calculate the value of imports.

Solution.

BOT = Value of Exports − Value of Imports

−1,000 = 300 − Value of Imports

−1,000 −300 = − Value of Imports

−1,300 = − Value of Imports

∴ Value of Imports = ₹ 1300 crores

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Illustration 3. If the value of exports of goods of a country is ₹ 1,000 crores and the value of imports of goods is ₹ 1,200 crores, how much will be the trade balance (or balance of trade)?

Solution.

$$\text{Balance of trade} = V_X - V_M$$
$$= 1000 - 1200$$
$$= ₹ - 200 \text{ crores}$$

∴ Country's Balance of Trade is ₹ (–) 200 crores.

Illustration 4. Calculate the value of imports when balance of trade is ₹ (–) 400 crores and value of exports is ₹ 300 crores.

Solution.

$$\text{Balance of trade} = V_X - V_M$$
$$\Rightarrow \quad -400 = 300 - V_M$$
$$\Rightarrow \quad V_M = 300 + 400$$
$$\therefore \quad V_M = ₹ 700 \text{ crores.}$$

Illustration 5. The balance of trade shows a deficit of ₹ 5,000 crores and the value of imports are ₹ 9,000 crores. What is the value of exports?

Solution.

$$\text{Balance of trade} = V_X - V_M$$
$$\Rightarrow \quad -5000 = V_X - 9000$$
$$\Rightarrow \quad V_X = 9000 - 5000$$
$$\Rightarrow \quad V_X = ₹ 4{,}000 \text{ crores.}$$

Illustration 6. A country's balance of trade is ₹ 100 crores and value of export of goods is ₹ 175 crores. Find out the value of import of goods.

Solution.

$$\text{Balance of trade} = V_X - V_M$$
$$\Rightarrow \quad 100 = 175 - V_M$$
$$\therefore \quad V_M = 175 - 100$$
$$= ₹ 75 \text{ crores.}$$

Illustration 7. A country's balance of trade is ₹ (–) 60 crores and value of import of goods is ₹ 100 crores. Find out the value of export of goods.

Solution.

$$\text{Balance of trade} = V_X - V_M$$
$$\Rightarrow \quad -60 = V_X - 100$$
$$\Rightarrow \quad V_X = 100 - 60$$
$$\therefore \quad V_X = ₹ 40 \text{ crores.}$$

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Illustration 8. The value of a country's import of goods is ₹ 200 crores and value of export of goods is ₹ 250 crores. Find out its balance of trade.

Solution.

Balance of trade $= V_X - V_M$

$\Rightarrow$ Balance of trade = 250 − 200

$\Rightarrow$ Balance of trade = ₹ 50 crores.

Illustration 9. A country's balance of trade is ₹ 75 crores. Value of import of goods is ₹ 100 crores. How much is the value of export of goods?

Solution.

Balance of trade $= V_X - V_M$

$\Rightarrow$ $75 = V_X - 100$

$\Rightarrow$ $V_X = 100 + 75 = 175$ crores.

Illustration 10. Balance of trade shows a deficit of ₹ 5,000 crores. Value of exports is ₹ 4,000 crores. Find out the value of imports.

Solution.

Balance of trade $= V_X - V_M$

$\Rightarrow$ $-5000 = 4000 - V_M$

$\Rightarrow$ $V_M = 4000 + 5000$

$\therefore$ $V_M =$ ` 9000 crores.

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Points to Remember

Balance of Trade (*BOT*), Balance of Invisibles and Balance of Payments (*BOP*) are the important concepts that are widely used in international trade.

BOT

1. Balance of trade (*BOT*) of a country shows its trade transactions with the rest of the world during a year. It is defined as the difference between the value of goods exported and value of goods imported in a given year. Goods exported and imported are known as visible items or merchandise.
2. A country may have surplus or deficit balance of trade. If $V_X > V_m$, the balance of trade is in surplus. On the other hand, if $V_X < V_m$, the balance of trade is in deficit. If $V_X = V_m$, it means balance of trade is balanced.

BOP

1. Balance of payments (*BOP*) is a broad term and refers to a systematic record of all economic transactions that take place between one country and the rest of the world during a given period of time (say a year).
2. In balance of payments (*BOP*), we include not only the value of goods exported and imported, *i.e.,* visible items but also invisible items and capital transactions.

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3. Invisible items include (*i*) services like insurance, banking, shipping, travel services, consultancy services rendered and received from abroad (*ii*) investment income (interest, profits, dividends and royalties) and (*iii*) unilateral transfers like gifts, donations, etc.

Current account and Capital account of *BOP*

1. Balance of payments account consists of two major components: (*i*) Current Account, and (*ii*) Capital Account. These parts are based on the divisions of transactions into real and financial.
2. The current account of balance of payments includes both trade account and invisible account. So, the sum of trade balance and invisible balance is called balance on current account.

   Symbolically, Balance on Current Account = Balance of Trade + Balance of Invisibles + Balance of Unilateral Transfers
3. The capital account of balance of payments shows all the inflows and outflows of capital. These flows of capital may be in the form of borrowings from and lending to abroad, both by private and government, etc.
4. Balance of current account and balance of capital account taken together shows the overall *BOP*'s position of the country.

Structure of *BOP*

The *BOP* of a country includes five major accounts which are as follows:

(*i*) Goods and Services Account,
(*ii*) Unilateral Transfers Account,
(*iii*) Long-term Capital Account,
(*iv*) Short-term Private Capital Account and
(*v*) Short-term Official Account (or Official Settlement Account).

Autonomous and Accommodating Items

1. Autonomous items in the *BOP* refer to all international economic transactions in the current and capital account that are undertaken for business or profit motive. These items are independent of the state of country's balance of payments. Autonomous items are also referred to as above the line items.

   Whether there is a *BOP* deficit or surplus depends on the balance of autonomous items. If autonomous receipts are less than autonomous payments, *BOP* is in deficit and vice versa.
2. Accommodating items in the *BOP* refer to transactions that occur because of other activity in the *BOP*, such as government financing. Accommodating items are also referred to as below the line items.

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Test Your Knowledge

Very Short Answer Type Questions **(*1 Mark*)**

1. Give the meaning of 'balance of trade'. (*AI 2008*)
2. What is the difference between the values of exports of goods and imports of goods called? (*AI 2007*)

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or

What do you mean by Balance of Trade (*BOT*)?

(*Delhi 2007; Foreign 2007; Sample Paper 2009*)

3. Which two transactions determine balance of trade? (*AI 2007; Delhi 2006, 2007*)

4. When there is a deficit in the balance of trade? (*AI 2009*)

5. When will there be a surplus in balance of trade? (*AI 2006*)

6. What is meant by Balance of Payments Account?

(*AI, Foreign 2007*; *Delhi 2006C, 07, 2008*)

7. Define Balance of Accounts of Invisibles.

8. List two items of the current account of *BOP* account.

9. List the items that are excluded in *BOT* and included in *BOP*.

10. What are unilateral transfers? Are they part of invisible items?

11. Name the two sub-accounts of *BOP* accounts.

12. What is the balance of visible items in the balance of payments account called?

13. What is balance of payments? (*Foreign 2011*)

14. Give meaning of balance of trade. (*Delhi 2014*)

15. What is excess of exports of goods over the imports of goods called? (*Foreign 2014*)

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Multiple Choice Question

1. Difference in the value of import and export of good is called:

(*a*) Balance of payments (*b*) Balance of trade

(*c*) Foreign trade (*d*) Export-import difference

2. A systematic record of a country's external transactions over a period of one year is called:

(*a*) Balance of payments (*b*) Balance of trade

(*c*) Foreign trade (*d*) Export-import difference

3. Current account of BOP records transactions relating to:

(*a*) Exchange of goods (*b*) Exchange of services

(*c*) Unilateral transfers (*d*) All of the above

4. Current transactions are of _____ nature:

(*a*) Flow (*b*) Stock

(*c*) Both flow and stock (*d*) None of the above

5. Capital transactions are of _____ nature:

(*a*) Flow (*b*) Stock

(*c*) Both flow and stock (*d*) None of the above

6. Invisibles may include:

(*a*) Services (*b*) Investment income

(*c*) Transfer payments (*d*) All of the above

7. Capital account may be:

(*a*) Private capital (*b*) Banking capital (*c*) Official capital (*d*) All of the above

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8. Transfer payments may be:

(*a*) Donations (*b*) Grants in cash by foreign governments

(*c*) Contributions from UN, WHO, etc. (*d*) All of the above

Short Answer Type Questions **(*3/4 Marks*)**

1. Distinguish between current account and capital account of balance of payments account. State two components of each. (*AI 2006, 08*)

or

State any four items each of current account and capital account of the balance of payments account. (*AI 2006; Foreign 2009*)

2. Make a distinction between accommodating and autonomous items in *BOP.*

3. What is meant by visible and invisible items in the Balance of Payments account? Give two examples of invisible items. (*Foreign 2007*)

4. State the components of the current account of balance of payments.

(*Delhi 2008, 09, 11*; *Foreign 2008, 09, 11*)

5. Distinguish between balance on trade account and balance on current account. (*AI 2008, 09*)

6. Which of the following transactions are written on the credit side of Balance of Payments Account? (Give reasons) (*AI 2008*)

(*i*) Exports

(*ii*) Foreign investment (from abroad)

(*iii*) Payment for services.

7. What type of transactions are recorded in current account of balance of payments account? Name them. (*Foreign 2009*)

8. Explain the meaning of deficit in a Balance of Payments account. (*Sample Paper 2009*)

9. Distinguish between current account and capital account of balance of payments account. Is import of machinery recorded in current account or capital account? Give reasons for your answer. (*Sample Paper 2009*)

10. What is balance of payments account? Where are 'borrowings from abroad' recorded in it and why? (*Delhi 2009*)

11. What is balance of payments? Give meanings of 'trade balance' and 'current account balance'. (*AI 2009*)

12. Explain the meaning of deficit in balance of payments. (*Delhi 2010*)

13. State the components of capital account of balance of payments. (*Delhi 2011*)

14. What does balance of payments account show? Name the two parts of the balance of payments account. (*Delhi 2011*)

15. State the components of current account of 'balance of payments.' (*Delhi 2011*)

16. Which transactions determine the balance of trade? When is balance of trade in surplus? (*AI 2011*)

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17. Distinguish between autonomous and accommodating transactions in the balance of payments. (*AI 2010, Foreign 2011*)

18. Distinguish between balance of trade and balance on current account. (*Foreign 2010; Delhi 2012, 13*)

19. List the items included as invisibles in the balance of payments account. (*AI 2012*)

20. Distinguish between current account and capital account of balance of payments account. (*Foreign 2013*)

21. Distinguish between 'autonomous' and 'accommodating' Balance of Payments transactions (*AI 2014*)

22. Explain the meaning of balance of payments deficit. (*Delhi 2014*)

23. How is balance of payment 'deficit' measured? Explain. (*Foreign 2014*)

Long Answer Type Questions **(*6 Marks*)**

1. What do you mean by balance of trade and balance of payments? Give difference between them.

2. Mention the items included in current account and capital account of balance of payments.

3. Give difference between the autonomous and accommodating items included in *BOP.*

4. Explain the distinction between autonomous and accommodating transactions in balance of payments. Also explain the concept of balance of payments 'deficit' in this context. (*Delhi 2012*)

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Answers

Multiple Choice Questions

1. (*b*) **2.** (*a*) **3.** (*d*) **4.** (*a*) **5.** (*b*) **6.** (*d*) **7.** (*d*) **8.** (*d*)

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Value Based and Higher Order Thinking (HOT) Questions (*With Answers*)

Unit 9: Balance of Payments

Q1. Explain exchange rate function.

Ans. Flexible rate of exchange is that rate which is determined by the demand for and supply of the currencies concerned in the foreign exchange market. That is,

$$R = f(D, S)$$

where, R = Exchange Rate

D = Demand for different currencies in the international market

S = Supply of different currencies in the international market.

The exchange rate at which demand for foreign currency is equal to its supply is called Par Rate of Exchange, Normal Rate or Equilibrium Rate. It is a flexible rate because it tends to change in accordance with changes in the supply of and demand for different currencies in the foreign exchange market.

Q2. What are merits of fixed exchange rate?

Ans. 1. It ensures **stability** in exchange rate. The exporters and importers do not have to operate under uncertainty about the exchange rate. Thus, it promotes foreign trade.

2. It promotes **capital movements.** Fixed exchange rate system attracts foreign capital because a stable currency does not involve any uncertainties about exchange rate that may cause capital loss.
3. Stable exchange rate **prevents capital outflow.**
4. It **prevents speculation** in foreign exchange market.
5. It force the government to keep **inflation in check.** In case of fixed exchange rate system, inflation causes balance of payments deficit resulting in depletion of foreign exchange reserves.

Q3. Explain currency depreciation.

Ans. Depreciation of currency. Changes in demand and supply of foreign exchange (say dollar) affects the equilibrium exchange rate. If the demand for foreign exchange (say US dollars) increases, supply schedule remaining the same, the exchange rate will rise. A rise in exchange rate implies appreciation of the US dollars (or depreciation of the Indian rupees).

Currency depreciation is shown in Fig., where:

D_1D_1 = It shows an increase in demand for US dollars in India. In this situation E_1 is the new equilibrium point. It gives the new foreign exchange rate as

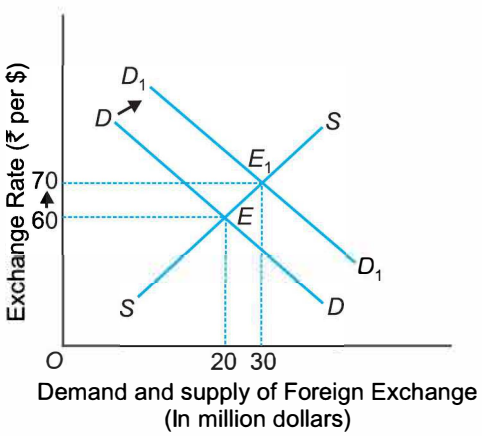


Fig. Depreciation of Currency

$ 1 = ₹ 70

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Increase in exchange rate implies that more rupees are needed to buy one US dollar. It means that Indian rupee is *depreciating*. In currency depreciation, domestic currency has become relatively less valuable. The foreign exchange market is cleared at $ 30 million.

Thus, depreciation of currency means fall in the value of domestic currency in terms of foreign currency.

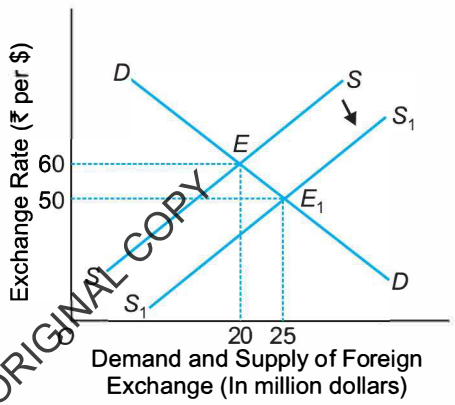
Q4. Explain currency appreciation.

Ans. Appreciation of Currency. If the supply of foreign exchange (say US dollars) increases, demand schedule remaining the same, the exchange rate will fall. A fall in the exchange rate implies appreciation of the Indian rupees (or depreciation of the US dollars.)

Currency appreciation is shown in Fig., where:

S_1S_1 = It shows an increase in supply of US dollars. It gives E_1 as the new equilibrium point. It gives the new foreign exchange rate as.

$ 1 = ₹ 50



The fall in exchange rate implies that less rupees are needed to buy one US dollar. It means that Indian rupee is *appreciating*. In currency appreciation, domestic currency has become relatively more valuable. The foreign exchange market is cleared at $ 25 million.

Thus, appreciation of currency means rise in the value of domestic currency in terms of foreign currency.

Q5. Let deficit in *BOT* be ₹ (–) 1,000 crores. The value of exports be ₹ 300 crores. Calculate the value of imports.

Ans. *BOT* = Value of Exports − Value of Imports

−1,000 = 300 − Value of Imports

−1,000 −300 = − Value of Imports

−1,300 = − Value of Imports

∴ Value of Imports = ₹ 1300 crores

Q6. What are the effects of disequilibrium in *BOP*?

Ans. Some of the effects of unfavourable balance of payments are as follows:

1. It lowers economic credibility of a country.
2. It hampers economic development of a country.
3. It reduces foreign exchange reserves of a country.
4. It leads to exploitation of a country as foreign dependence sometimes assumes the form of political dependence.

Q7. What are official reserve transactions? Explain their importance in the balance of payments.

Ans. The country could engage in official reserve transactions. That is, running down its reserves of foreign exchange in case of a deficit by selling foreign currency in the foreign exchange

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market. The decrease (increase) in official reserves is called the overall balance of payments deficit (surplus). The basic premise is that the monetary authorities are the ultimate financiers of any deficit in the balance of payments (or the recipients of any surplus). A country is said to be in balance of payments equilibrium when the sum of its current account and its non-reserve capital account equals zero, so that the current account balance is financed entirely by international lending without reserve movements.

Q8. Differentiate between devaluation and depreciation.

Ans. Devaluation

1. **Devaluation** means reduction in the external value of a country's currency as a conscious policy measure adopted by the **government** of a country. In other words, we make our currency cheaper in terms of foreign currency.
2. When a country suffers from continued deficit in its balance of payments, it may resort to devaluation of its currency with a view to **encouraging exports** and restricting imports.
3. It takes place in **Fixed** Exchange Rate System.

Depreciation

1. Changes in demand and supply of foreign exchange (say dollar) affects the **equilibrium exchange rate**.
2. If the **demand for foreign exchange** (say US dollars) **increases, supply** schedule remaining the same, the exchange rate will rise. A rise in exchange rate implies appreciation of the US dollars (or depreciation of the Indian rupees).
3. It takes place in flexible exchange rate system.

Q9. Distinguish between the nominal exchange rate and the real exchange rate. If you were to decide whether to buy domestic goods or foreign goods, which rate would be more relevant? Explain.

Ans. Nominal exchange rate. It is defined as price of foreign currency in terms of domestic currency.

Real exchange rate. It is defined as price of goods abroad relative to those at home.

In order to buy domestic goods or foreign goods, real exchange rate is often taken as a more appropriate measure.

Q10. Explain capital account of *BOP*?

Ans. Capital Account. It records capital transfer such as loans and investment between one country and the rest of the world which causes a change in the asset or liability status of the residents of a country or its government.

(*a*) Private Capital. In this only resident's capital transactions are included. It can be long-term or short-term capital. Long-term capital inlcudes direct investment in shares, real estate, bonds, long-term loans, etc., whereas short-term capital inlcudes short-term loans and repayment with their original maturity of one year or less. *Example.* Investment by an individual of one country to another country.

(*b*) Banking Capital. It includes foreign financial assets and liabilities of the government and the central bank receipts of repurchases from IMF.

(*c*) Official Capital. It is divided into:

(*i*) *Loan.* It includes credit granted by foreign governments and international institutions to central and state governments.

(*ii*) *Amortisations of capital.* It means purchase and resale of securities sold to the foreigners.

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(*iii*) *Miscellaneous errors and omissions.* These indicate understatement or overstatement of receipts and payments. At times data may be incomplete or inaccurate (*i.e.* errors) or one side of transactions may escape recording (*i.e.* omissions).

(*d*) Gold and Foreign Capital. These are essential for stabilising the foreign exchange rate of the home currency. This reserve keeps changing depending on the net balance of other transactions.

Q11. What is par value of exchange?

Ans. It is the equilibrium exchange rate in the foreign exchange market. At this exchange rate demand for foreign exchange equals to supply of foreign exchange.

Q12. What does depreciation of Indian rupee imply for US dollar?

Ans. It means appreciation of the US dollars.

Q13. Where are 'borrowings from abroad' recorded in the BOP account and why?

Ans. Borrowings from abroad are recorded in debit side of the capital account of BOP because it decreases long term home country assets owned by foreign private citizens and government.

Q14. How does fixed foreign exchange rate promotes capital movements and foreign trade.

Ans. (*a*) Fixed exchange rate ensures stability in the exchange rate. The exporters and importers do not have to operate under uncertainty about the exchange rate. Thus, it promotes foreign trade.

(*b*) It promotes capital movements. It attracts foreign capital because a stable currency does not involve in any uncertainties about exchange rate that may cause capital loss.

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NCERT Textual Questions with Answers

Unit 9: Balance of Payments

Q1. Differentiate between balance of trade and current account balance.

Ans. Balance of Trade. It is defined as the difference between exports and imports of goods. It takes into account only those transactions arising out of exports and imports of goods (the visible items). It does not consider the exchange of services between the countries.
Symbolically, $BOT = V_X - V_M$ where V_X = value of exports, V_M = value of imports.
Balance on Current Accounts. The current account of *BOP* records imports and exports of visible items (goods) and invisible items (services) and unilateral transfers (gifts and donations). The net value of balances of visible and of invisible trade and of unilateral transfers is the balance on current accounts.

Q2. What are official reserve transactions? Explain their importance in the balance of payments.

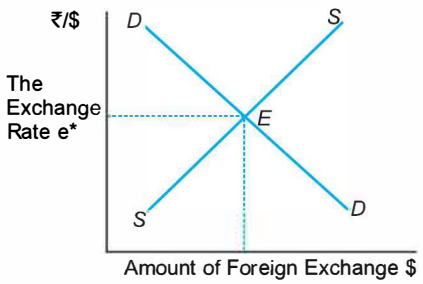
Ans. The country could engage in official reserve transactions, that is, running down its reserves of foreign exchange in case of a deficit by selling foreign currency in the foreign exchange market. The decrease (increase) in official reserves is called the overall balance of payments deficit (surplus). The basic premise is that the monetary authorities are the ultimate financiers of any deficit in the balance of payments (or the recipients of any surplus). A country is said to be in balance of payments equilibrium when the sum of its current account and its non-reserve capital account equals zero, so that the current account balance is financed entirely by international lending without reserve movements.

Q3. Distinguish between the nominal exchange rate and the real exchange rate. If you were to decide whether to buy domestic goods or foreign goods, which rate would be more relevant? Explain.

Ans. Nominal exchange rate. It is defined as price of foreign currency in terms of domestic currency.
Real exchange rate. It is defined as price of goods abroad relative to those at home.
In order to buy domestic goods or foreign goods, real exchange rate is often taken as a more appropriate measure.

Q4. How is the exchange rate determined under a flexible exchange rate regime?

Ans. In this case of flexible exchange rates, without central bank intervention, the exchange rate moves to clear the market. That is, equilibrium exchange rate occurs where demand and supply of foreign exchange are equal. In the Fig., the equilibrium exchange rate is e^*.



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Q5. Differentiate between devaluation and depreciation.

Ans. Devaluation

1. **Devaluation** means reduction in the external value of a country's currency as a conscious policy measure adopted by the government of a country. In other words, we make our currency cheaper in terms of foreign currency. When a country suffers from continued deficit in its balance of payments, it may resort to devaluation of its currency with a view to encouraging exports and restricting imports.
2. It takes place in Fixed Exchange Rate System.

Depreciation

1. **Depreciation** of a currency means fall in value of domestic currency in terms of foreign currency, *e.g.,* if value of rupee in terms of US dollar falls, say from ₹ 50 to ₹ 80 to a dollar, it will be case of depreciation of Indian rupee because more rupees are required now to buy one US dollar.
2. It occurs in Flexible Exchange Rate System.

Q6. Are the concepts of demand for domestic goods and domestic demand for goods the same?

Ans. Demand for domestic goods and domestic demand for goods are two different concepts. Demand for domestic goods is demand for goods made by both domestic and foreign countries. Domestic demand for goods is demand for goods by our own country for goods which may be produced in foreign countries.

Q7. Should a current account deficit be a cause for alarm? Explain.

Ans. Not really, since deficit in current account is carried over by the capital account.

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PRACTICE PAPER–1

Time: 3 Hours **Maximum Marks: 100**

General Instructions:

1. *All questions in both the sections are compulsory.*
2. *Marks for questions are indicated against each.*
3. *Question Nos.* **1-5** *and* **16-20** *are very short answer questions carrying* **1** *mark each. They are required to be answered in* ***one*** *sentence each.*
4. *Question Nos.* **6-8** *and* **21-23** *are short answer questions carrying* **3** *marks each. Answers to them should normally not exceed* **60** *words each.*
5. *Question Nos.* **9-11** *and* **24-26** *are also short answer questions carrying* **4** *marks each. Answers to them should normally not exceed* **70** *words each.*
6. *Question Nos.* **12-15** *and* **27-30** *are long answer questions carrying* **6** *marks each. Answers to them should normally not exceed* **100** *words each.*
7. *Answers should be* ***brief*** *and to the point and the above word limits should be adhered to as far as possible.*
8. *Questions marked star (*) are value based questions.*

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Section B

Note. (Q. No. 1 to 15 related to Section–A are in other book—Saraswati Introductory Microeconomics)

16. Define final goods. 1

17. Give the meaning of 'balance of trade'. 1

18. What does a change from \$3 = £1 to \$2 = £1 show? 1

19. Intermediate goods are: 1

(*a*) Used for final consumption (*b*) Included in national income

(*c*) Remain within the production boundary (*d*) None of the above

20. *GDP* at market price: 1

(*a*) Is a flow concept (*b*) Is at current prices

(*c*) Excludes transfer payments (*d*) All of the above

21. How does excess demand affect output and price? 3

or

Explain 'bank of issue' function of a central bank.

22. Explain 'the store of value' function of money. 3

23. Explain any two functions of a central bank. 3

24. Compute Net Value Added at Factor Cost from the following data: 4

Items	**₹ (in lakhs)**
(*i*) Depreciation	20
(*ii*) Intermediate cost	90
(*iii*) Subsidy	5
(*iv*) Sales	140
(*v*) Exports	7
(*vi*) Change in stock	(–) 10
(*vii*) Import of raw material	3

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25*. Government grants subsidies on fertilizers to farmers. Explain the economic value it reflects. 4

26. Distinguish between current account and capital account of balance of payments account. State two components of each. 4

or

If *MPS* is 0.2, how much new investment is required to make the national income rise by ₹ 600 crores? Calculate. Define multiplier.

27. In an economy, income increases by ₹ 10,000 as a result of a rise in investment expenditure by ₹ 1,000.
Calculate: 6

(*a*) Define Investment Multiplier and calculate it.

(*b*) What is the relationship between MPC and APC. Calculate MPC.

28. Will the following be included in domestic factor Income of India? Give reasons for your answer. 6

(*i*) Profits earned by a foreigu bank from its branches in India.

(*ii*) Profits earned by residents of India from his company in Singapore.

(*iii*) Salaries received by Indians working in American Embassy in India.

29. What is inflationary gap? How is it measured? Show in a diagram. 6

30. From the data given below calculate National Income by (*i*) Income Method (*ii*) Expenditure Method and (*iii*) GNP_{FC}. 6

Items	**₹ (in crores)**
(*i*) Government final consumption expenditure	7,341
(*ii*) Indirect taxes	8,834
(*iii*) Gross fixed capital formation	13,248
(*iv*) Mixed income of self-employed	29,267
(*v*) Subsidies	1,120
(*vi*) Change in stock	3,170
(*vii*) Rent, interest and profit	9,637
(*viii*) Consumption of fixed capital	4,046
(*ix*) Private final consumption expenditure	51,177
(*x*) Export of goods and services	4,812
(*xi*) Net factor income earned from abroad	(–) 255
(*xii*) Compensation of employees	23,420
(*xiii*) Import of goods and services	5,664

or

Calculate Gross National Disposable Income and Personal Income from the given data:

Items	**₹ (in crores)**
(*i*) Personal tax	100
(*ii*) Net indirect taxes	80
(*iii*) Corporation tax	70
(*iv*) National income	800
(*v*) Net factor income from abroad	5
(*vi*) Consumption of fixed capital	50
(*vii*) National debt interest	70
(*viii*) Retained earnings of pvt. corporate sector	40
(*ix*) Net current transfers to the rest of the world	(–) 10
(*x*) Current transfers from government	30
(*xi*) Share of government in national income	70

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PRACTICE PAPER–2

Time: 3 Hours **Maximum Marks: 100**

General Instructions:

1. *All questions in both the sections are compulsory.*
2. *Marks for questions are indicated against each.*
3. *Question Nos.* **1-5** *and* **16-20** *are very short answer questions carrying* **1** *mark each. They are required to be answered in* ***one*** *sentence each.*
4. *Question Nos.* **6-8** *and* **21-23** *are short answer questions carrying* **3** *marks each. Answers to them should normally not exceed* **60** *words each.*
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6. *Question Nos.* **12-15** *and* **27-30** *are long answer questions carrying* **6** *marks each. Answers to them should normally not exceed* **100** *words each.*
7. *Answers should be* ***brief*** *and to the point and the above word limits should be adhered to as far as possible.*
8. *Questions marked star (*) are value based questions.*

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Section B

Note. (Q. No. 1 to 15 related to Section–A are in other book—Saraswati Introductory Microeconomics)

16. When we talk of S = I in equilibrium, are S and I ex-ante or ex-post? 1

17. Leakage can be: 1

(*a*) savings (*b*) taxes (*c*) imports (*d*) All of the above

18. Income method of measuring national income is also called: 1

(*a*) Factor payment method (*b*) Industrial origin method

(*c*) Income disposal method (*d*) All of the above

19. Give the meaning of deficient demand. 1

20. Define foreigu exchange. 1

21. What is the difference between revenue budget and capital budget? 3

22. Compute Net Value Added at market price from the following data: 3

Items	₹ (in crores)
(*i*) Subsidies	1
(*ii*) Sales	100
(*iii*) Closing stock	10
(*iv*) Indirect taxes	5
(*v*) Intermediate consumption	30
(*vi*) Opening stock	20
(*vii*) Consumption of fixed capital	15

or

Explain 'Banker to the government' function of a central bank .

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23. List the types of transactions that are recorded in the current account of balance of payments account. 3

24*. Is deficit budget good for a developing country? Does it reflect any economic value. Mention it with reason. 4

or

Outline the steps required to be taken in deriving the Consumption Curve from the given Saving Curve. Use diagram and equations.

25. What is meant by visible and invisible items in the balance of payments account? Give examples of invisible items. 4

26. Explain and graphically represent the concept of deflationary gap. Explain different measures of removing this gap. 4

27. When is an economy in equilibrium? Explain with the help of Saving and Investment functions. Also explain the changes that take place in an economy when the economy is not in equilibrium. Use diagram. 6

28. Distinguish between: 6

(*i*) Net domestic product and gross national product.

(*ii*) Intermediate product and final product.

29. In an economy, $S = -50 + 0.5Y$ is the saving function where S = saving and Y = national income and investment expenditure is ₹ 7000. Calculate: 6

(*i*) Equilibrium level of national income.

(*ii*) Consumption expenditure at equilibrium level of national income.

or

From the following information about an economy, calculate (*i*) its equilibrium level of national income and (*ii*) savings at equilibrium level of national income. Consumption function: $C = 2.00 + 0.9\ Y$ (where, C = Consumption expenditure and Y = National Income). Investment expenditure I = ₹ 3000.

30. From the following data, calculate "national income" by (*a*) income method and (*b*) expenditure method: 6

Items	**₹ (in crores)**
(*i*) Interest	150
(*ii*) Rent	250
(*iii*) Government final consumption expenditure	600
(*iv*) Pvt. final consumption expenditure	1,200
(*v*) Profits	640
(*vi*) Compensation of employees	1,000
(*vii*) Net factor income to abroad	30
(*viii*) Net indirect taxes	60
(*ix*) Net exports	(–) 40
(*x*) Consumption of fixed capital	50
(*xi*) Net domestic capital formation	340

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PRACTICE PAPER–3

Time: 3 Hours **Maximum Marks: 100**

General Instructions:

1. *All questions in both the sections are compulsory.*
2. *Marks for questions are indicated against each.*
3. *Question Nos.* **1-5** *and* **16-20** *are very short answer questions carrying* **1** *mark each. They are required to be answered in* ***one*** *sentence each.*
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5. *Question Nos.* **9-11** *and* **24-26** *are also short answer questions carrying* **4** *marks each. Answers to them should normally not exceed* **70** *words each.*
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Section B

Note. (Q. No. 1 to 15 related to Section–A are in other book—Saraswati Introductory Microeconomics)

16. Define dirty floating. 1

17. Which of the following is a bank? 1

(*a*) Post office saving banks (*b*) LIC (*c*) UTI (*d*) IDBI

18. GNDI is Net current transfers from rest of the world plus: 1

(*a*) GNP_{MP} (*b*) NNP_{FC} (*c*) NDP_{FC} (*d*) NDP_{MP}

19. If disposable income is ₹ 1000 and consumption expenditure is ₹ 700, find out *APS*. 1

20. What is fixed exchange rate? 1

21. Define Non-tax revenue. Give examples. 3

22. Calculate Net Value Added at Factor Cost. 3

Items	₹ (in crores)
(*i*) Sales	800
(*ii*) Purchase of raw material from domestic market	400
(*iii*) Import of raw material	100
(*iv*) Subsidies	30
(*v*) Consumption of fixed capital	40
(*vi*) Change in stock	50
(*vii*) Rent	70

or

What is change in stock? How do we calculate it?

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23. Giving reasons, categorise the following into direct tax and indirect tax: 3

(*i*) Corporation tax (*ii*) Sales tax

(*iii*) Wealth tax (*iv*) Service tax.

24*. How will government's investment in education help economic growth? Which economic value does it reflect? 4

25. How are exports affected by depreciation of foreigu currency? Explain. 4

26. What are the causes of deficient demand? Show it graphically and explain measures to correct it. 4

or

How are consumption and saving related to each other? What is the relation between *APS* and *APC* and also between *MPS* and *MPC*?

27. Distinguish between 'autonomous' and 'accommodating' Balance of Payments transactions. 6

28. Are the following items included in estimating a country's national income? Give reasons. 6

(*i*) Contribution to provident fund by employer.

(*ii*) Production for self-consumption by farmer.

(*iii*) Income from smuggling.

29. $C = 100 + 0.75\ Y$ is a consumption function (where C = consumption expenditure and Y = national income) and investment expenditure is ₹800. On the basis of this information calculate: 6

(*i*) Equilibrium level of national income.

(*ii*) Savings at equilibrium level of national income.

or

In an economy, aggregate demand is less than aggregate supply. Is the economy in equilibrium? If not, explain the changes that will bring the economy in equilibrium.

30. From the data given below calculate: 6

(*i*) Gross Domestic Product at Market Price by Income Method.

(*ii*) National income by Expenditure Method.

Items	**₹ (in crores)**
(*i*) Compensation of employees	13,000
(*ii*) Indirect taxes	3,700
(*iii*) Gross fixed capital formation	6,300
(*iv*) Interest, rent and profit	5,000
(*v*) Government final consumption expend.	3,400
(*vi*) Mixed income of self-employed	16,000
(*vii*) Change in stock	1,000
(*viii*) Imports	1,800
(*ix*) Exports	1,700
(*x*) Pvt. final consumption expend.	29,000
(*xi*) Subsidies	300
(*xii*) Net factor income from abroad	250
(*xiii*) Consumption of fixed capital	2,200

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PRACTICE PAPER–4

Time: 3 Hours **Maximum Marks: 100**

General Instructions:

1. *All questions in both the sections are compulsory.*
2. *Marks for questions are indicated against each.*
3. *Question Nos.* **1-5** *and* **16-20** *are very short answer questions carrying* **1** *mark each. They are required to be answered in* ***one*** *sentence each.*
4. *Question Nos.* **6-8** *and* **21-23** *are short answer questions carrying* **3** *marks each. Answers to them should normally not exceed* **60** *words each.*
5. *Question Nos.* **9-11** *and* **24-26** *are also short answer questions carrying* **4** *marks each. Answers to them should normally not exceed* **70** *words each.*
6. *Question Nos.* **12-15** *and* **27-30** *are long answer questions carrying* **6** *marks each. Answers to them should normally not exceed* **100** *words each.*
7. *Answers should be* ***brief*** *and to the point and the above word limits should be adhered to as far as possible.*
8. *Questions marked star (*) are value based questions.*

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Section B

Note. (Q. No. 1 to 15 related to Section–A are in other book—Saraswati Introductory Microeconomics)

16. Give meaning of revenue receipts. 1

17. The merit of issuing notes with RBI can be seen in: 1

(*a*) Uniformity in note issue (*b*) Stability in currency

(*c*) Control of credit (*d*) All of the above

18. In currency depreciation, there is: 1

(*a*) Fall in the value of domestic currency in terms of foreigu currency

(*b*) No change in the value of domestic currency in terms of foreigu currency

(*c*) Rise in the value of domestic currency in terms of foreigu currency

(*d*) None of the above

19. What is full employment? 1

20. Define balance of accounts of invisible. 1

21. Give the meaning of factor income to abroad and factor income from abroad. Also give an example of each. 3

or

Distinguish between domestic product and national product. When can domestic product be more than national product?

22. Complete the following table: 3

Income (₹)	**Consumption (₹)**	**Marginal Propensity to save**	**Average Propensity to consume**
1	12	.....	.....

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2	26	.....	.....
3	40	.....	.....
4	54	.....	.....

23. Distinguish between Revenue receipts and Capital receipts 3

24*. Which economic value does the government's policy of subsidies and taxation serve? 4

25. Distinguish between appreciation of domestic currency and revaluation of domestic currency. 4

26. What is deficient demand? Show it graphically. Explain briefly how changes in (*i*) taxation and (*ii*) open market operation be helpful in correcting deficient demand. 4

or

It is planned to make a new investment of ₹ 1000 crore in the economy. How much will be the increase in National Income if *MPS* is 0.4. Calculate. Also explain multiplier.

27. Explain all the changes that will take place in an economy when aggregate demand is not equal to aggregate supply. 6

28. Are the following a part of country's net domestic product at market price? Explain: 6

(*i*) Net indirect taxes

(*ii*) Net export

(*iii*) Consumption of fixed capital.

29. In an economy, every time income rises, 20 per cent of rise in income is saved. Now, suppose in the same economy investment rises by ₹ 200 crores. Calculate the following: 6

(*i*) Change in income

(*ii*) Change in consumption.

or

What changes will take place to bring an economy in equilibrium if:

(*i*) planned savings are greater than planned investment.

(*ii*) planned savings are less than planned investment.

30. From the following data calculate: 6

(*i*) Net Domestic Product at factor cost

(*ii*) Gross National Disposable Income.

Items	**₹ (in crores)**
(*i*) Net current transfers to the rest of the world	(–) 60
(*ii*) Net factor income from abroad	(–) 40
(*iii*) Government final consumption expend.	2,000
(*iv*) Pvt. final consumption expend.	6,000
(*v*) Net domestic fixed capital formation	800
(*vi*) Gross domestic capital formation	950
(*vii*) Change in stock	50
(*viii*) Net exports	(–) 50
(*ix*) Profits	1,000
(*x*) Net indirect taxes	7,000

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PRACTICE PAPER–5

Time: 3 Hours **Maximum Marks: 100**

General Instructions:

1. *All questions in both the sections are compulsory.*
2. *Marks for questions are indicated against each.*
3. *Question Nos.* **1-5** *and* **16-20** *are very short answer questions carrying* **1** *mark each. They are required to be answered in* ***one*** *sentence each.*
4. *Question Nos.* **6-8** *and* **21-23** *are short answer questions carrying* **3** *marks each. Answers to them should normally not exceed* **60** *words each.*
5. *Question Nos.* **9-11** *and* **24-26** *are also short answer questions carrying* **4** *marks each. Answers to them should normally not exceed* **70** *words each.*
6. *Question Nos.* **12-15** *and* **27-30** *are long answer questions carrying* **6** *marks each. Answers to them should normally not exceed* **100** *words each.*
7. *Answers should be* ***brief*** *and to the point and the above word limits should be adhered to as far as possible.*
8. *Questions marked star (*) are value based questions.*

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Section B

Note. (Q. No. 1 to 15 related to Section–A are in other book—Saraswati Introductory Microeconomics)

16. Define government budget. 1

17. State any two major sectors in a circular flow of income. 1

18. Revenue expenditure may be on: 1

(*a*) Subsidies (*b*) Non-interest expenditure

(*c*) Interest expenditure (*d*) All of the above

19. Why is the value of *MPc* not greater than one? 1

20. What do you mean by valuation? 1

21. Complete the following table: 3

Income (₹)	Consumption (₹)	APS	Multiplier(K)
0	15	——	——
50	50	——	——
100	85	——	——
150	120	——	——

22. When does the situation of excess demand and deficient demand arise in an economy? What is the effect on output, price and employment under both the situations? 3

or

Explain 'banker's bank' function of a central bank.

23. Distinguish between direct and indirect taxes. Give two examples of each. 3

24. Explain how 'inequalities in income' a limitation of the GDP as an indicator of welfare? 4

or

Explain determination of foreign exchange rate. How is the exchange rate of Indian rupee determined?

25*. If the government decides to open more parks and public libraries, who will benefit? 4

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26. How does money overcome the main problem of exchange in the barter system? Explain. 4

27. Explain the main components of balance of payments on capital and current account. Is import of machinery recorded in current account or capital account? 6

28. Draw a straight line consumption curve. From it derive a saving curve explaining the process. On this diagram show: 6

(*a*) The level of income at which average Propensity to consume is equal to one.

(*b*) A level of income at which average Propensity to save is negative.

29. Are the following a part of a country's "net domestic product at market price"? Explain by giving reason: 6

(*a*) Net indirect taxes. (*b*) Net exports.

(*c*) Net factor income from abroad. (*d*) Consumption of fixed capital.

30. Calculate the following from the given data: 6

(*a*) Value added by firm P and Q.

(*b*) Gross domestic product at market price.

Items	**₹ (in lakhs)**
Sales by firm P of wheat	80
Sales by firm Q to firm P	40
Sales by firm Q to households	60
Imports by firm P of machines	20
Exports by firm Q of equipments	30
Opening stock of firm P	25
Closing stock of firm P	15
Opening stock of firm Q	35
Closing stock of firm Q	50
Purchases by firm Q	100

or

Calculate the following from the given data:

(*a*) Net national disposable income (*b*) Private income and

(*c*) Personal disposable income

Items	**₹ (in lakhs)**
National income	800
Indirect taxes	70
Subsidies	10
Savings of non-departmental enterprises	30
National debt interest	50
Net factor income from abroad	(–)20
Consumption of fixed capital	40
Current transfers from rest of the world	45
Income from property and entrepreneurship accruing to govt. administrative departments	60
Direct taxes paid by households	40
Profits	100
Savings of private corporate sector net of retained earnings of foreign companies	80
Current transfers from govt. administrative departments	90
Corporation tax	25

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PRACTICE PAPER–6

Time: 3 Hours **Maximum Marks: 100**

General Instructions:

1. *All questions in both the sections are compulsory.*
2. *Marks for questions are indicated against each.*
3. *Question Nos.* **1-5** *and* **16-20** *are very short answer questions carrying* **1** *mark each. They are required to be answered in* ***one*** *sentence each.*
4. *Question Nos.* **6-8** *and* **21-23** *are short answer questions carrying* **3** *marks each. Answers to them should normally not exceed* **60** *words each.*
5. *Question Nos.* **9-11** *and* **24-26** *are also short answer questions carrying* **4** *marks each. Answers to them should normally not exceed* **70** *words each.*
6. *Question Nos.* **12-15** *and* **27-30** *are long answer questions carrying* **6** *marks each. Answers to them should normally not exceed* **100** *words each.*
7. *Answers should be* ***brief*** *and to the point and the above word limits should be adhered to as far as possible.*
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Section B

Note. (Q. No. 1 to 15 related to Section–A are in other book—Saraswati Introductory Microeconomics)

16. Why is the study of the problem of unemployment in India considered a macro economic study? 1

17. Budget is placed before: 1

(*a*) Lok Sabha (*b*) Rajya Sabha

(*c*) Both Lok Sabha and Rajya Sabha (*d*) Parliament

18. If the value of *MPS* is 0.1, what is the value of multiplier? 1

(*a*) 10 (*b*) 5 (*c*) 2 (*d*) ∞

19. When will balance of trade show a surplus? 1

20. Give the meaning of balance of trade? 1

21. Calculate net value added at factor cost from the following data. 3

Items	₹ (in lakhs)
Depreciation	20
Intermediate cost	90
Subsidy	5
Sales	140
Exports	7
Change in stock	(–)10
Imports of raw material	3

22. Explain any three components of aggregate demand. 3

23. Explain the working of investment multiplier with the help of an example. 3

or

Explain the meaning of consumption function.

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24. Define primary deficit in a government budget. What does it indicate? 4

25*. State the economic value that lies in people's reduction in their savings? 4

26. How does government reduce income inequality among the society through its budgetary policy? 4

or

Name all the instruments of credit control. Describe any one.

27. (a) Explain the problem of double counting in the estimation of national income with the help of an example. How can this problem be solved? 6

(b) Give classification of final expenditure or GDP_{MP}.

28. What is the foreign exchange rate? Explain how exchange rate is determined in the foreign exchange market. 6

or

What is balance of payments account? Name three components of its current and capital account.

29. Calculate (a) Net National Disposable Income and (b) Personal Disposable Income from following data: 6

Items	**₹ (in crores)**
Govt. fixed consumption expenditure	1500
Change in stock	60
Gross domestic capital formation	800
Private income	4000
Net exports	(–)70
Corporation tax	500
Net indirect tax	250
Private fixed consumption expenditure	2800
Net factor income from abroad	(–)50
Consumption of fixed capital	200
Net retained earnings of private enterprises	50
Direct taxes paid by households	300
Net current transfers from rest of the world	20

30. Explain with the help of a diagram the situation of deficient demand in an economy. Explain any two measures of correcting it. 6

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PRACTICE PAPER–7

Time: 3 Hours **Maximum Marks: 100**

General Instructions:

1. *All questions in both the sections are compulsory.*
2. *Marks for questions are indicated against each.*
3. *Question Nos.* **1-5** *and* **16-20** *are very short answer questions carrying* **1** *mark each. They are required to be answered in* ***one*** *sentence each.*
4. *Question Nos.* **6-8** *and* **21-23** *are short answer questions carrying* **3** *marks each. Answers to them should normally not exceed* **60** *words each.*
5. *Question Nos.* **9-11** *and* **24-26** *are also short answer questions carrying* **4** *marks each. Answers to them should normally not exceed* **70** *words each.*
6. *Question Nos.* **12-15** *and* **27-30** *are long answer questions carrying* **6** *marks each. Answers to them should normally not exceed* **100** *words each.*
7. *Answers should be* ***brief*** *and to the point and the above word limits should be adhered to as far as possible.*
8. *Questions marked star (*) are value based questions.*

Section B

Note. (Q. No. 1 to 15 related to Section–A are in other book—Saraswati Introductory Microeconomics)

16. What are injections? 1

17. How does government reduce income inequality through tax? 1

18. The various fiscal policy measures that will increase aggregate demand and, thus, control the problem of deficient demand are: 1

(*a*) Increasing the level of government expenditure

(*b*) Reduction in the level of taxes

(*c*) A mix of increasing government expenditure and decreasing the rate of taxes

(*d*) All of the above

19. What do you mean by managed floating exchange rate? 1

20. What is multiplier? 1

21. Distingnish between real and nominal gross domestic product. 3

or

Explain 'legal reserve requirements' (LRR) function of the central bank.

22. Explain the 'banker to the government' function of the central bank. 3

23. Distingnish between devaluation and depreciation of domestic currency. 3

24. State the components of current account of BOP. 4

or

Draw circular flow in an open economy.

25*. What is the effect (mention the value) of government policy of MGNREGA? 4

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26. What are direct and indirect taxes? How are they different? Giving reasons. Classify the following into direct and indirect tax: 4

(a) Wealth tax

(b) Value added tax.

27. (a) When foreign exchange rate in a country is on the rise, what impact is it likely to have on imports and how? 6

(b) Give main sources of demand for foreign exchange.

28. In an economy 75 per cent of the increase in income is spent on Consumption. Investment is increased by ₹ 1,000 crore. Calculate: 6

(a) Total increase in income.

(b) Total increase in consumption expenditure.

29. From the following data, calculate: 6

(*a*) Gross Domestic Product at factor cost and

(*b*) Factor Income to abroad.

Items	**₹ (in lakhs)**
Gross domestic capital formation	600
Interest	200
Gross national product at market price	2800
Rent	300
Compensation of employees	1600
Profits	400
Dividends	150
Factor income from abroad	50
Change in stock	100
Net indirect taxes	240
Net fixed capital formation	400
Net exports	(–) 30

or

Distingnish between domestic product and national product by giving suitable example in support of your answer.

30. How will you treat the following while estimating national Income of India? 6

(*a*) Dividend received by an Indian from his investment in shares of a foreign company.

(*b*) Money received by a family in India from relatives working abroad.

(*c*) Interest received on loans given to friend for purchasing a car.

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